BANKING REGULATION AND THE BASEL III ACCORD: AN EXAMINATION OF THE RISKS AND SHORTCOMINGS POSED BY BASEL III

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This work or any part thereof has not previously been presented in any form to the University or to any other body whether for the purposes of assessment, publication or for any other purposes (unless otherwise indicated). Save for any express acknowledgements, references and/or bibliographies cited in the work, I confirm that the intellectual content of the work is the result of my own efforts and of no other person.

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Abstract

In 1974 the Committee on Banking Regulations and Supervisory Practices was created and supported by the Bank for International Settlements. It was envisaged that a forum should be created so that regular interaction and co-operation could be achieved by member countries to improve financial stability and to enhance the quality of banking supervision.

The aim of this research is to examine the risks and shortcomings posed by Basel III; specifically capital ratios, credit rating agencies and value-at-risk. These are based on the author's initial research that indicated these to be the most problematic. The research also aims to provide recommendations in order to improve Basel III. Additionally, the research includes Basel I and II to illustrate the developments, problems and milestones to create a wider appreciation of this area.

The title of this research is tackled extensively in Chapters 4 and 5 where the risks and shortcomings are considered in the former and recommendations are put forward in the latter. This consists of changes that are taking place or have been suggested. It is argued that there is still much work to do, but there has been significant improvement(s).

The main contribution to knowledge and understanding the field in the form of originality is found throughout the research in its treatment of

the subject matter and can also be viewed substantially in Chapter 5. The recommendations can be summarised below.

Capital Ratios

1. A longer implementation period for liquidity coverage ratio and high quality liquid assets.
2. A longer implementation period for high quality liquid assets in a European context.
3. High quality liquid assets need re-categorisation.
4. The creation of a dedicated liquidity risk management team.

Credit Rating Agencies

1. International Organisation of Securities Commissions model and more enforceability through regulators and governments.
2. Tighter regulation through the Basel regulations.
3. The creation of a public credit rating agency.
4. Uniformity on whether agencies offer opinions or advice and more accountability through the Basel regulations.

Value-at-Risk

1. Research and investment to improve credit value adjustment value-at-risk.
2. The use of all three conventional approaches - Analytical Variance/Covariance, Historical, and Monte Carlo.

3. Penalising those who manipulate value-at-risk to turn products/positions from high risk to low risk.

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For my Dad, I miss our conversations

CHAPTER 1 - INTRODUCTION

The purpose of the research is to examine the risks and shortcomings posed by Basel III and recommendations will be provided on those risks in order to improve Basel III. Before we begin, it would be fruitful to briefly illustrate the structure of the research and what will be explored over the coming chapters. This will allow the reader to envisage the route that the research has taken and guide the reader to the end.

Structure of research

To reiterate, it will be useful to begin with the structure of the research and what each chapter heading will be, alongside a small description of what the chapter will entail and what the main points of discussion will be. By doing so the reader can fully grasp and envisage the research. The layout of the research may change over time due to factors that could arise over the coming years, but the author will closely follow the structure explained below in order to support the research title.[1]

Chapter 1 - Introduction

The first chapter will provide a brief overview that will include an introduction to the Basel regulations,[2] the Committee on Banking

[1] It should be noted 'the research' refers to this thesis and 'author' refers to the writer of this thesis, unless otherwise stated.
[2] Basel regulations refers to Basel I, II, II.5, III and IV depending on context and chapter.

Regulations and Supervisory Practices (later renamed Basel Committee on Banking Supervision[3] in 1989, hereinafter Basel Committee) and the Bank for International Settlements[4] (BIS). The aims and objectives of the research will be expounded followed by theory and methodology. In addition, a succinct overview of Basel I along with strengths and weaknesses will be illustrated before concluding. Chapter 1 will end with a conclusion.

Chapter 2 - Basel II

The second chapter will discuss Basel II and how it developed from Basel I. Chapter 2 will consider the problems that arose, as well as inherited, and how that led to Basel III. This chapter will focus heavily on the three pillars that Basel II is known for and by splitting them into individual parts the author will disseminate Basel II before assessing the strengths and weaknesses. A conclusion will be provided at the end so that Chapter 3 can follow.

Chapter 3 - Basel III

The third chapter will give an in depth analysis of Basel III and how its structure has changed from the previous two iterations. A more comprehensive review will be given because it is the current version and most relevant to the research. Chapter 3 will also include strengths and

[3] The Basel Committee on Banking Supervision is, in short, a group consisting of supervisory authorities. It will be explained in much more detail in due course.
[4] The Bank for International Settlements is an international financial institution. It is owned by central banks and it aims to promote financial and monetary cooperation across the world.

weaknesses which corroborates with the previous two chapters, this will enable Chapter 4 to begin and lead onto the poignant part of the research - risks and shortcomings.

Chapter 4 - Basel III risks and shortcomings

The fourth chapter will examine the areas that show obvious concern. This will be an important chapter that will primarily endeavour to support the research title. It is this chapter that will define the entire research and prove those areas of risk most problematic. By coherently explaining the problems that exist, evidence will be gathered from all sources and will be used to support that Basel III still has many weaknesses despite it being the third version of the Basel regulations.

Chapter 5 - Conclusions and recommendations

The final chapter will provide conclusions and recommendations. This will be in regard to the three areas of risk examined in Chapter 4 and as such recommendations will be put forward which will draw on current recommendations, expansion of current recommendations, and creating new recommendations for improving the Basel regulations. Reference will also be made to the eventuality of Basel IV and what it may look like and the likelihood that Basel IV may be very close to being introduced by the time the research is submitted (circa 2019). This is due to speculation

that Basel IV is already being produced.[5] In recent times and since the research began, it can now be interpreted as Basel III additional material rather than Basle IV. Chapter 5 will bring together everything that has been written from the previous chapters in order to illustrate the findings of the research.

OVERVIEW

The research title is - **Banking regulation and the Basel III Accord: An examination of the risks and shortcomings posed by Basel III**. As the title indicates the research is solely concentrated on the Basel regulations.

The Basel regulations is a document consisting of many rules that aim to positively reinforce banking regulation and financial stability that the banking world should seek to incorporate into domestic law, whether it be in part or in full and to bolster domestic law and regulation. As Ahmed states, 'The Basel accords are merely a concordat among developed countries describing recommendations…'.[6] The author would stipulate that whilst the Basel regulations are recommendations, it will be ascertained over the course of the research that it is far reaching.

[5] KPMG, 'Basel 4 - Emerging from the Mist?' https://assets.kpmg.com/content/dam/kpmg/pdf/2013/09/emerging-from-the-mist.pdf accessed 22 November 2014.
[6] J M Ahmed, 'A Conceptual Framework for the Basel Accords Based Regulation' (2016) 24(1) JFRC 90, 96.

Basel I was created with the greatest intention to improve stability and capital strength as highlighted by the then Financial Services Authority[7] (FSA) who said Basel I is to, '…help strengthen the soundness and stability of the international banking system as a result of the higher capital ratios that it required'.[8] This was adopted in the United Kingdom by the FSA, now the Financial Conduct Authority[9] (FCA), and policed by the Bank of England. This still emanates today and is what the Basel regulations continuously endeavour to achieve.

The Basel regulations are devised and managed by the Basel Committee with the support of the BIS. A specific definition of the Basel Committee can be extrapolated from the BIS:

> 'The Basel Committee is the primary global standard-setter for the prudential regulation of banks and provides a forum for cooperation on banking supervisory matters. Its mandate is to strengthen the regulation, supervision and practices of banks worldwide with the purpose of enhancing financial stability'[10]

[7] A quasi-judicial body that dealt with regulation of financial services. This body has now been replaced by the Financial Conduct Authority.
[8] Financial Services Authority, 'The Basel Accord and Capital Requirements Directive' http://www.fsa.gov.uk/about/what/international/basel accessed 7 October 2014.
[9] The Financial Conduct Authority replaced the Financial Services Authority in 2013. Again, it is a financial regulatory body but it is independent from the UK government.
[10] Bank for International Settlements, 'About the Basel Committee' http://www.bis.org/bcbs/about.htm accessed 8 October 2014.

Essentially, the Basel Committee consist of a group of banking supervisory authorities that began several years before the enactment of Basel I.

The Basel Committee was created in 1974 shortly after the collapse of the German bank, Bankhaus Herstatt.[11] It was considered that a set of rules were needed to ensure a future collapse of this kind never happened again. The purpose of such was to establish an agreement among the G10 central banks so that consensus could be achieved to enable a minimum set of capital rules which in turn could be applied to the banking industry;[12] simply put, a forum for dialogue.

Since Basel I was published in 1988 two further iterations have been devised; Basel II in 2004 with an implementation date of 2006[13] and Basel III in 2010 with an implementation date of 2019.[14] As will be pointed out in Chapter 3, due to the complexity and changes made to Basel III there is a notably long time lapse between publication and full implementation. This is due to, for example, the significant changes in capital requirements that mean adoption of such rules will take time.

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[11] Bank for International Settlements, 'A Brief History of the Basel Committee' http://www.bis.org/bcbs/history.pdf page 1 accessed 7 October 2014.
[12] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards' http://www.bis.org/publ/bcbs04a.htm accessed 7 October 2014.
[13] Bank for International Settlements, 'Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework' http://www.bis.org/publ/bcbs107.htm accessed 7 October 2014.
[14] European Banking Authority, 'Implementing Basel III Europe: CRD IV Package' http://www.eba.europa.eu/regulation-and-policy/implementing-basel-iii-europe accessed 7 October 2014.

In very recent times there is still a strong need for regulation, especially when it comes to capital and liquidity. This can be seen from the recent collapse of VBS Bank.[15] Whist a mutual bank, which does not have the same regulatory standards (Basel III) compared to commercial banks,[16] it does highlight the importance of regulation, capital adequacy and liquidity.[17] It should be acknowledged that the collapse of VBS bank was affected by several individuals within the bank's hierarchy, politicians, and changes in legislation which resulted in large sums of money being withdrawn from the bank causing a liquidity crisis; whilst the former reason is not an area of the research it does highlight the importance of regulation and liquidity. The author would stipulate that this very recent case illustrates the significance of the research in which continued efforts are needed when it comes to regulation, capital and liquidity, even when capital adequacy ratios and liquidity requirements are exceeded.[18] These two points as well as others, will be explored later in the research.

[15] Renee Bonorchis, 'South Africa's VBS Mutual Bank Fails Amid 'Severe Liquidity Crisis'' https://www.bloomberg.com/news/articles/2018-03-11/s-africa-s-vbs-mutual-bank-fails-amid-severe-liquidity-crisis accessed 1 November 2018.
[16] Sunita Menon, 'VBS Mutual Bank: How Did We Get Here?' https://www.businesslive.co.za/fm/features/2018-03-13-vbs-mutual-bank-how-did-we-get-here/ accessed 1 November 2018.
[17] See Siseko Njobeni, 'VBS Bank Liquidity is 'Far Worse'' https://www.iol.co.za/business-report/companies/vbs-bank-liquidity-is-far-worse-15230535 accessed 1 November 2018.
[18] Ibid, the Reserve Bank of South Africa stated that banks are in a stable place and that the banking sector is above the Basel III minimum liquidity requirements. Additionally, banks were sufficiently capitalised and above the minimum requirements needed in a accordance with capital adequacy ratios.

Aim of research and key points to be discussed

The aim of the research is to examine the risks and shortcomings of Basel III and provide recommendations to improve Basel III. Specific areas will be scrutinised to show Basel III's limitations and include, but are not limited to, capital ratios,[19] credit rating agencies[20] (CRAs) and value-at-risk[21] (VaR). These were identified during the literature review and reoccurred many times. By focusing on these three points the research will not only examine these risks and shortcomings, but also provide recommendations to enhance Basel III. In short these will be briefly explained now as they are vital to the research title due to the author believing them to be the most harmful. It should also be acknowledged that by restricting this area to the three aforesaid issues, the research can provide an in depth examination compared to a broad overview in which more issues would be considered.

Firstly, capital ratios which have increased dramatically from Basel II and can affect many banks and financial institutions (hereinafter bank(s)) as vast amounts of money will need to be accumulated in order to meet the minimum requirements now recommended by Basel III. For example, the

[19] Capital ratios can be simply explained as a bank's own funds (capital) against the bank's risky assets.
[20] Credit Rating Agencies rate the creditworthiness of entities such as bond issuers, companies and countries. It will be explained in much more detail throughout the research.
[21] Value-at-Risk is concerned with risk management. There are many different formulas used in calculating the financial risk of a product. Value-at-Risk will be explained in much more detail throughout the research.

minimum total capital including the conservation capital buffer has meant that total capital has risen from 8 percent to 10.5 percent,[22] and this may increase further if a countercyclical capital buffer is needed which would increase total capital to 13 percent.[23] This will mean that a bank will have to put more money aside to combat potential risk.

Secondly, CRAs which play a large role in determining risk. This has improved over time but there are still problems that exist and there is an argument that too much significance has been given to CRAs.[24] This is further highlighted by the British Parliament who have commented that tighter supervision and policing is needed to ensure that CRAs are better regulated.[25]

Thirdly, VaR which is the most complex of the three areas. It is without doubt one of the main failings of the Basel regulations. Some of these failings have been consulted on by the BIS whom state the potential faults of using VaR is that it does not adequately capture credit risk, or in some

[22] Bank for International Settlements, http://www.bis.org/bcbs/basel3/basel3_phase_in_arrangements.pdf accessed 22 November 2014.
[23] Bank for International Settlements, http://www.bis.org/bcbs/basel3/b3summarytable.pdf accessed 22 November 2014.
[24] Rebecca Marston, 'What is a Rating Agency?' http://www.bbc.co.uk/news/10108284 accessed 22 November 2014.
[25] Parliament, 'Credit Rating Agencies', Session 2010-2012 February 2012, Point 2, http://www.publications.parliament.uk/pa/cm201012/cmselect/cmtreasy/writev/1866/cra16.htm accessed 23 November 2014.

situations even basic risk.[26] Thus highlighting one of several issues identified with this mechanism.

The gravity of the research is that not only will the key weaknesses of Basel III be identified[27] with a specific focus on the aforesaid three, the underlying problems will also be examined. To complete the research recommendations will be provided and are based on what is currently in the field, what has been suggested, and what the author of the research recommends.[28] As was briefly alluded to earlier in the case of VBS bank, further enhancements are required and the liquidity crisis highlights some of the issues that are discussed in the research.[29]

To conclude, the three risks above will be scrutinised thoroughly in Chapter 4, although there will be other risks of Basel III that will be acknowledged in Chapter 3 that are also problematic, for example leverage ratio which plays a significant role in Basel III and contains some glaring faults. Needless to say, this weakness will be explored along with other risks and shortcomings in due course.

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[26] Bank for International Settlements, 'Fundamental Review of the Trading Book', http://www.bis.org/publ/bcbs219.pdf page 9 accessed 23 November 2014.
[27] The three main issues have also been identified to varying degrees by other authorities.
[28] This may be to develop further a recommendation already put forward but has not come to fruition, or an entirely new way to improve Basel III's limitations
[29] The author believes that VBS bank and the issues discussed in Chapters 3, 4 and 5, illuminate the substance of the research and contribution in Chapter 5 where recommendations are given.

THEORY

The theory that will be predominantly used is black letter law.[30] This theory has been used for many years by legal academics, as well as lawyers and professionals who work directly and indirectly through legal channels.[31] It has proven to be a solid theory that relies on various sources of material.

Black letter law is both rigid and structured in its approach and by applying this theory the research will not deviate from the main objective of the research title. This type of theory forms an authoritarian standpoint in that it can provide one correct answer from the legal issue posed.[32] Whilst this can be perceived as inflexible, it can also be viewed that it can lead to one correct answer for any legal problem. In this instance, by applying a black letter law approach to illustrate the risks and shortcomings of Basel III, this theory will only look at the information and facts of the Basel regulations and relevant material that involves such.

Furthermore, black letter law does not take into account outside influences such as a socio-legal approach. Whilst socio-legal has its merits such as reform, it does detract from the law itself and may become

[30] There will also be elements of soft law due to the nature of the Basel regulations as well as other guidelines that have been published.
[31] M Salter and J Mason, *Writing Law Dissertations* (Pearson Longman 2007) Chapter 4.
[32] Ibid 117-118.

convoluted from the issues at hand. On this basis, other approaches such as socio-legal,[33] historical[34] and comparative[35] have been excluded.

METHOD

The method that will be used throughout the research will be a qualitative data approach. This method will prove most suitable because the research will look at the work of others such as academics and experts in the field, including any applicable case law and statutory law. Due to the information being sourced, the descriptive elements of that information and commentary will be considered, whereas a quantitative approach would not follow suit.

The key benefit of qualitative data is that it relies on the collection and analysis of data that is none numerical. This methodology encourages in depth research as opposed to breadth and is arguably more open than a quantitative approach. By applying a deeper research approach a better

[33] A socio-legal approach has not been chosen as it is not critical enough (ibid 179) and a high critique is needed in order to support the research title. Also, a lack of identity and direction can be associated with a socio-legal approach due to the many strands that it has developed over time. Arguably, the socio-legal approach provides no clear definition of what it really encompasses in comparison to a black letter law approach.

[34] A historical approach has not been chosen as the main theory to implement but it will form part of the research in that Basel I and II will be considered before assessing Basel III. This is to enable the reader to appreciate and understand the Basel regulations in their entirety.

[35] A comparative approach has not been chosen due to the immensely time consuming nature. So it is not surprising when it has been described as, '…very time-consuming and, in particular, difficult to timetable accurately' (ibid 189). Whilst a comparative approach does have its advantages such as being highly critical and helpful in providing a framework to compare legal concepts, it would still be dicey to apply this theory due to the laborious nature of such a huge task already.

outcome can be achieved. It should be noted that whilst examining the Basel regulations some numerical data may be referred to but there will not be a heavy reliance in this respect, it is merely to show percentage increases or formulaic equations. For example, how much capital a bank should put to one side under Tier 1 core capital, which has changed since Basel I.

The penultimate part of this chapter will concisely review Basel I to include how it came to being, why it was structured as it was, an overview of the structure and purpose of the first Basel Accord, and the strengths and weaknesses of Basel I. This overview will be shorter in comparison to Basel II and III due to it being the oldest set of guidelines, yet it is worth considering so that Basel II and III can follow. In doing so, greater clarity can be achieved which in turn will allow a comprehensive view of the Basel regulations.[36]

[36] At this early stage it would be prudent to distinguish the difference between regulation and supervision as both will be referred to throughout the research. Regulation can be described as written into law which is then enforced by regulatory authorities and bodies. Supervision can be described as the applicable regularity authority or body that make sure, by examining and monitoring, that, and in this context, banks are adhering to the regulation set. It should be further noted that the author refers to the Basel Accord (I, II, III) as the Basel regulations, it should not be misinterpreted as hard law as the Basel Accords are guidelines and recommendations which are to be implemented by a country. For further discussion see European Parliament, 'Overview and Structure of Financial Supervision and Regulation in the US' http://www.europarl.europa.eu/RegData/etudes/STUD/2015/492470/IPOL_STU%282015%29492470_EN.pdf accessed 4 April 2019, or European Central Bank, 'Regulation and Supervision in Europe – Can Many Cooks Make a Good Broth?' https://www.bankingsupervision.europa.eu/press/speeches/date/2017/html/ssm.sp170515.en.html accessed 4 April 2019.

BASEL I

The Basel Committee can be traced back to 1974[37] and in 1975 the Basel Committee met for the first time in order to establish principles for the supervision of banks.[38] Alexander et al. note that this was the beginning of modern international financial regulation.[39]

The Basel Committee consisted of a group of ten countries referred to as G10,[40] plus the addition of Luxembourg and Spain.[41] This composed of representatives from central banks and regulatory authorities.[42] It has been referred to as a central bankers' club which is, by design, small and homogenous.[43] In essence, this should enable quick actions to be taken and a degree of flexibility.

Prior to the Basel 1988 Accord, otherwise known as Basel I, a series of meetings were conducted by the Basel Committee in relation to capital adequacy, a topic that moved into the international policy arena at the

[37] Bank for International Settlements, 'History of the Basel Committee' https://www.bis.org/bcbs/history.htm accessed 4 April 2019.
[38] B Quillin, *International Financial Co-Operation: Political Economics of Compliance with the 1998 Basel Accord* (Routledge, Abingdon 2011) 7.
[39] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 254.
[40] Consisting of industrial countries that discuss on matters ranging from economic and monetary to financial. Furthermore, meetings take place with both the IMF and World Bank.
[41] It now consists of the G20 and some other major markets such as Hong Kong.
[42] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 88.
[43] M S Barr and G P Miller, 'Global Administrative Law: The View from Basel' (2006) 17(1) EJIL 15, 18.

beginning of the 1980s[44] and has remained prominent ever since.[45] At that time this was of grave concern and with international risk increasing it became apparent that some form of intervention was required.[46] Goodhart explains that the force for this stemmed from international lending, something that was vastly growing, and that regulation at the time was more effective at domestic level compared to international levels. So it is easy to comprehend the concerns that the Basel Committee felt. This further added to an existing worry that was apparent at the time i.e. a level playing field between banks.[47] As Alexander et al. state, '…banking regulators wanted to establish an international minimum standard that would create a level playing field for banks operating in the G10 countries…'.[48]

Capital adequacy can be simply explained as the ratio of a bank's capital to risk based assets (or liabilities). In theory, the higher a bank's capital, the higher the probability that it can withstand difficult financial events. In essence a bank can either raise new capital to improve financial stability or lower the risk of assets.

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[44] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 40.
[45] Capital adequacy being the minimum reserves of capital that a bank should have in place to combat adverse financial conditions in the market.
[46] C Goodhart, *The Basel Committee on Banking Supervision* (Cambridge University Press 2011) 146-181 Goodhart provides an in depth analysis of the history leading to the published Basel I Accord.
[47] Ibid 147.
[48] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 38.

Leading from this and digging further, it can be acknowledged that one of the main contributing factors that triggered the introduction of Basel I was the failure of the German bank Bankhaus Herstatt, combined with banks in the United Kingdom and the United States bank Franklin National earlier in May 1974.[49] In short, Bankhaus Herstatt relied heavily on the speculation of foreign exchange markets.[50] It is worth noting what actually happened as it will display one of the main triggers that sparked the Basel Committee coming together.

The Bankhaus Herstatt collapse caused problems for the following reason. Bankhaus Herstatt traded during the German market hours and the United States participants during theirs. The problem here was that when it became apparent to the German authorities that Bankhaus Herstatt was insolvent, the German authorities shut down Bankhaus Herstatt at the time of the German markets closing and, crucially, this was before the United States market opened. Due to the nature of insolvency which stopped payments from being made out but permitted payments in, the United States participants were left in a difficult position[51] because they had already transferred monies to Bankhaus Herstatt. This event was a pivotal moment in the history of banking regulation and a new term was created, Herstatt risk; the risk between two legs of foreign exchange

[49] C Goodhart, *The Basel Committee on Banking Supervision* (Cambridge University Press 2011) 4.
[50] Bank for International Settlements, 'Bank Failures in Mature Economies' http://www.bis.org/publ/bcbs_wp13.pdf accessed 25 February 2015.
[51] C Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011) 31.

deals as was the case here. Bankhaus Herstatt was a key topic discussed in a later meeting of the Basel Committee between member countries on how to counter this issue.[52]

The collapse of Bankhaus Herstatt made it apparent that there was not enough equity to counter risk and on this basis capital adequacy was scrutinised thereafter. Regulators from Germany and the United States were not able to counteract the cross-border reverberations due to bank default in the forex market.[53] Several forms of regulatory reform were created as a response to Bankhaus Herstatt's failure[54] and the Basel Committee later published a paper known as the Basel Concordat 1975. The paper set out supervisory responsibility and the co-operation between national authorities[55] due to the failings of the German bank. As Walker states, 'The original purpose of the Committee was to begin to deal with the immediate problems which arose with the crisis in international financial markets in 1974'.[56]

The first document created by the Basel Committee in relation to the supervision of international banks can be traced to this point in time,

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[52] Ibid 34-36.
[53] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 254.
[54] Bank for International Settlements, 'Bank Failures in Mature Economies' http://www.bis.org/publ/bcbs_wp13.pdf page 6 accessed 7 March 2015.
[55] Bank for International Settlements, 'Report to the Governors on the Supervision of Banks' Foreign Establishments' http://www.bis.org/publ/bcbs00a.pdf accessed 23 September 2015.
[56] G A Walker, *International Banking Regulation Law, Policy and Practice* (Kluwer Law International 2001) 51.

known as the 1975 Concordat.[57] This would be the first set of recommendations[58] produced by the Basel Committee and can be viewed as a first block from which Basel I would eventually grow.

Several years later, a second paper was published (the 1983 Revised Concordat) which revised the 1975 Concordat and outlined the principles of supervisory responsibility and capital adequacy, and the fact that by looking at a bank's totality was the only way that supervisory authorities could assess the soundness of a bank.[59] This would be the stepping stone for the official release of Basel I.

It should be acknowledged that capital adequacy did not enter the policy arena until the late 1970s and early 1980s with the Basel Concordat 1983, even though the collapse of Bankhaus Herstatt was in 1974.[60] Additionally, international lending and the growth of Japanese banks during this time was also of deep concern.[61] The Basel Concordat 1983 was also in response to the Latin American debt crisis[62] and the failure of

[57] It outlined four principles: supervisory responsibility for host and parent authorities, liquidity responsibility for host authorities, solvency is the responsibility of parent authorities, and foreign exchange positions in terms of co-operation.
[58] See, ibid 86-100 for a more in depth discussion of the 1975 Concordat.
[59] Bank for International Settlements, 'Principles for the Supervision of Banks' Foreign Establishments (May 1983) http://www.bis.org/publ/bcbsc312.pdf accessed 11 January 2015.
[60] The alarming expansion of Japanese banks was also worrying the Basel Committee due to the valuations being solely based on unrealised capital.
[61] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 40.
[62] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 47.

the Italian bank, Banco Ambrosiano.[63] Whilst Basel I was gathering momentum, on reflection there would still be a few more years before Basel I would come to fruition.

Moving forward there was slow progress[64] in putting together a document that would enable banks to operate more efficiently and safely. By 1984 it was still apparent that Basel I was not going to be realised anytime soon and several emerging countries were struggling to meet the proposed debt obligations that had been discussed several years earlier.[65] There were also other factors that affected Basel I coming to fruition, such as the complexity of such a document and categories of capital being two major sticking points.[66] A questionnaire was released to gather feedback from the G10 countries to help the process and encompassed capital and risk ratios, but this did not make the process run any smoother or quicker.

By 1986, twelve years since the Basel Committee was created and the Bankhaus Herstatt collapse, there were still no signs of a document on banking and capital regulation. It is at this point that momentum gathered pace. As Goodhart explains, the United States were becoming

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[63] J R Barth, G Caprio Jr and R Levine, *Rethinking Bank Regulation: Till Angels Govern* (Cambridge University Press 2008) 64.
[64] Private meeting, Professor Charles Goodhart, 4 September 2015 LSE, London. There was no urgency and perhaps this was due to the recent crisis of Mexico/Argentina and that another crisis may not happen for quite some time.
[65] C Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011) 160.
[66] During this time there were several definitions of capital which did not help the process.

irritated by the snail like pace being made by the Basel Committee and decided to move forward with their own initiative.[67] There was a general feeling that the United States were on the right track, particularly from the United Kingdom. The link that brought these two countries together was that the United States model was not too dissimilar to what had already been discussed in the past by the Basel Committee, and there were many similarities between the United States and the United Kingdom in what was deemed to be sound banking practices.[68]

The United States wanted to raise capital adequacy requirements but many banks within the United States opposed this because of the level playing field issue and that banks in the United States could be disadvantaged in relation to their foreign rivals. Additionally, there was also a lack of togetherness by members of the G10 which did not help the situation. Evidently, a partner was needed to push this movement forward and assist in making Basel I real; this partner would be the United Kingdom.

The United States and United Kingdom shared common ground in many respects and both were of the opinion that capital regulation needed to be given a more official presence to protect banks around the world. It should be acknowledged that the policy created between the United

[67] C Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011) 164.
[68] Ibid 165.

States and United kingdom bilateral capital accord[69] contained many similarities to Basel I that was still in progress and being developed by the Basel Committee.[70]

It is this partnership that should be acknowledged and praised which started in 1986 and essentially helped speed the process of Basel I coming to realisation. Whilst the Basel Committee dedicated much time and effort to the creation of Basel I, it was, in the author's opinion, the negotiations and partnership between the United States and United Kingdom that really pushed Basel I forward, otherwise many more years of deliberation would surely have resumed.

In 1987 a consultative document was published.[71] After many years and gruelling meetings,[72] a year later in late 1988 the Basel Committee published Basel I. It was stated that Basel I would create a regime that

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[69] Published January 1987. See Bank of England, 'Agreed proposal of the United States Federal Banking Supervisory Authorities and the Bank of England on primary capital and capital adequacy assessment' https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/1987/agreed-proposal-of-the-us-federal-banking-supervisory-authorities.pdf?la=en&hash=8CB027D41283DA6A06DC35A092AEFEF6DB6FD0BE accessed 3 April 2019.

[70] C Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011) 170.

[71] Bank for International Settlements, 'Proposals for international convergence of capital measurement and capital standards' http://www.bis.org/publ/bcbs03a.pdf accessed 21 October 2015.

[72] Private meeting, Professor Charles Goodhart, 4 September 2015 LSE, London. In the grand scheme of things Goodhart was not of the opinion that there was an excessive amount of meetings. Considering the scale of document that was being discussed and that the Basel Committee was changing at the time, evolving and metamorphosing from an oversight body to a soft law making body.

recommended a minimum percentage of capital to risk weighted assets[73] (RWA) to combat financial instability. Although not legally binding, it was a moral obligation for those member states involved to then implement Basel I into their respective country.[74] This was a milestone for banking regulation and financial stability and was a success as it became adopted in over forty countries[75] in the immediate years that followed.

It was originally stated that Basel I would apply to internationally active banks[76] and that a minimum of 8 percent was required by those banks in relation to RWA. As will shortly be explained, RWA ranged from 0 to 100 percent. A fairly straightforward approach was implemented, one which portrays positive and negative aspects. A positive of this simplistic model was that it enabled many banks to follow these guidelines without much difficulty. In contrast, it was not sophisticated to go beyond this basic formula. The banking industry is complex by nature and as will be discussed shortly, a more intelligent model would be needed in order to cope with the demand of large international banks. Overall, Basel I was a simple document which endeavoured to achieve soundness and stability, and provide a level playing field.[77]

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[73] Risk weighted assets are those of a bank's assets that are weighted against risk.
[74] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 17.
[75] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 2.
[76] R Gottschalk, *The Basel Capital Accords in Developing Countries: Challenges for Development Finance* (Palgrave Macmillan 2010) 5.
[77] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 117.

It should be addressed at this stage that the figure of 8 percent was not a stab in the dark but rather a premeditated decision. Upon analysis, it was a combination of two formulas that were present at the time; the Brussels formulae and Gerzensee formulae.[78] After some consideration, it was decided by Peter Cooke the then Basel Committee Chairman, that 8 percent was most appropriate because most countries at that time were in the range of 7 to 10 percent.[79] It was also considered to be the highest figure that could be recommended that would not cause hindrance to member countries, and whilst no economic value was attached it was arbitrary in essence and based on current conditions.[80] This figure still remains today in Basel III.

The main focus of Basel I was to address the problem of credit risk[81] that was epidemic at the time. As Foot notes, '…there was…widespread recognition that there were many different reasons why a bank could fail. But there was a general and accurate perception that credit risk was the primary threat'.[82] In addition there was concern that capital levels were severely low amongst international banks.[83] Over time Basel I evolved

[78] C Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011) 178.
[79] Ibid.
[80] Private meeting, Professor Charles Goodhart, 4 September 2015 LSE, London.
[81] A A Hall, 'International Banking Regulation into the 21st century: Flirting with Revolution' (2000) 2(6) JIFM 216, 230.
[82] M Foot, 'Operational Risk Management for Financial Institutions' (2002) 10(4) JFRC 313, 313.
[83] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 2.

and the Basel Committee made much needed improvements, one of them being market risk,[84] for example.

The importance of why Basel I was of great significance is that it was pivotal to all economies as Hall explains, '…banking is one of the most highly regulated industries, largely because of the central role banking plays in domestic and international financial stability and policy',[85] thus highlighting the scale and importance of the Basel regulations and the Basel Committee. Hall is right, banking plays such a huge role in domestic and international financial stability and is vital in securing safer economies. Hall further remarks, '…banking industry does not only have an impact on national economies. It also affects the international financial system, particularly if larger, more international banks are involved'.[86] This statement reinforces the significance of Basel I i.e. to strengthen and regulate the banking industry and economies worldwide and to promote financial stability.[87] In modern times there are many large international banks and regulation is paramount.

It should be appreciated that there have been other financial crises and events that have triggered the Basel Committee to respond that have not

[84] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 121.
[85] A A Hall, 'International Banking Regulation into the 21st Century: Flirting with Revolution' (2000) 2(6) JIFM 216, 217.
[86] Ibid.
[87] Also see G Walker, R Purves and M Blair, 'International Agreements and Supranational Bodies' in D Sabalot, *Financial Services Law* (4th edn, Oxford University Press 2018) 184-185.

been discussed at this point or in the remaining chapters (only in passing). For example, Black Monday 1987 which ignited the process of quantitative VaR;[88] the Asian Crisis 1997 that prompted the Basel Committee to consider lessons to learn from the 1997 crisis[89] and also produce guidelines for a framework on internal controls due to the deficiencies illuminated by the 1997 crisis;[90] or the twin towers terrorist attack in 2001, which influenced[91] the Basel Committee in respect of operational risk.[92]

Having considered a brief history of Basel I it is beneficial to consider the nature of a bank and what a bank does so that a link can be drawn between banking regulation and a bank i.e. Basel I and a bank, to provide clarity.

[88] Matthias Werner and Hajo Greif, 'Calculating the Unknown. Rationalities of Operational Risk in Financial Institutions' https://www.triple-c.at/index.php/tripleC/article/view/184 page 237 accessed 9 April 2019.
[89] Bank for International Settlements, 'Supervisory Lessons to be Drawn from the Asian Crisis' https://www.bis.org/publ/bcbs_wp2.pdf accessed 9 April 2019.
[90] Bank for International Settlements, 'Framework for the Evaluation of Internal Control Systems' https://www.bis.org/publ/bcbs33.pdf accessed 9 April 2019.
[91] R Barry Johnston and Oana M Nedelescu, 'The Impact of Terrorism on Financial Markets' https://www.imf.org/external/pubs/ft/wp/2005/wp0560.pdf page 12 accessed 9 April 2019.
[92] Bank for International Settlements, 'Sound Practices for Management and Supervision of Operational Risk' https://www.bis.org/publ/bcbs96.pdf accessed 9 April 2019.

The nature of a bank[93]

Essentially banks[94] require money from their clients in the form of deposits and this is then given out as loans to other clients. Interest is then paid on those loans which is, in most cases, significantly higher than the initial deposits and it is from this difference that profits can be made for a bank. There are two problems that arise for a bank when trying to make profit. First, if they do not achieve enough deposits to fuel their loan business. Second, which is arguably more important, if the client cannot pay back the loan. Needless to say that the consequence of this is circumvented as long as the bank has enough equity to withstand and absorb financial loss.[95]

Bearing in mind the simplistic description of how a bank operates and in a traditional capacity,[96] the Basel Committee wanted to achieve financial stability and that all banks adhere to a set of guidelines relating to equity in order to reach fair competition.[97] The core element of Basel I was

[93] Throughout the research the author will refer to bank and banks, depending on context the distinction should be made between commercial banking and securities markets. As will be described in this subsection, banks require money from clients in the form of deposits to which is then loaned to other clients i.e. commercial banks. Banks that deal with securities and trade in financial assets, are investment banks.
[94] See J R Barth, G Caprio Jr and R Levine, *Rethinking Bank Regulation: Till Angels Govern* (Cambridge University Press 2008) 102-110 for discussion of what a bank is.
[95] There are other risks that face a bank, some of which will be explored in the remainder of the research such as credit risk p68, operational risk p80, market risk p91 and liquidity risk p150.
[96] See R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 23-26 for the discussion of banks post 2008 and definition and transactions in recent times.
[97] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 5.

capital adequacy,[98] as Wong states, '…a bank has to hold sufficient capital (in proportion to the risk taken) for the business it is engaged in'.[99] Wong is not wrong, if a bank does not hold sufficient capital in relation to business activities, then it will be harder for a bank to withstand adverse conditions. An explanation provided by Wandhofer nicely puts it as, 'You can think of capital as your own personal savings — they will 'save' you in moments of difficulty, as you have been prudent in accumulating them during good years'.[100]

It can be ascertained that the Basel committee was trying to counteract low capital in banks which would not be sufficient to withstand a financial crisis and also support a bank's ability to guard itself from the same. What can be observed from this is that the nature of a bank and its natural desire to facilitate its loan business goes hand in hand with the Basel Committee's vision of protecting those banks. The Basel Committee does not want to stop a bank from one of its core aims, to make money, but the protection of a bank from financial collapse and the effects that this would have on the economy that it operates in is imperative.

In summary, it has been explained what the Basel Committee was trying to achieve, along with a basic description of how a bank operates and the

[98] It is clear to see why capital adequacy was a key point of discussion for the Basel Committee during the time leading to the publication of Basel I.
[99] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 199.
[100] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 89.

link between the two. With these two elements in mind, it is important to consider the structure of Basel I and how it tried to harmonise these two elements. This was one of the biggest tasks for the Basel Committee in that whilst creating Basel I, consideration needs to be given on how this can be incorporated and implemented. Equally, one needs to consider the way a bank operates and appreciate a bank's ethos of making money. Therefore, perhaps the task is not to harmonise the Basel regulations alongside the nature of a bank, it is to make sure a bank has suitably adequate safety mechanisms that help in financial adverse conditions whilst still allowing a bank to make money. It is only then that both the bank and the Basel Committee will be content. Yet this is an arduous task and in reality may not be achievable due to the aims and complexity of the Basel regulations and of a bank.

Basel I structure

As Crouhy et al. point out, one of the main aims of Basel I was to create, '…international minimum capital guidelines for the world's banking systems'.[101] On this basis a simple scheme was introduced so that capital adequacy could be fulfilled and a link could be made between bank's capital requirements to credit exposures. Indeed, bank exposure was categorised into groups, or risk weights, and a specific borrower type

[101] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 117.

could then be correlated to the appropriate capital requirement, as Gup explains, '…a simple "one size fits all"'.[102] Gup is right, on reflection the risk weights were suitable for all circumstances. Unfortunately, this is basic and limited, and problems resulted from this which will be discussed shortly.

By categorising risk weights, a bank obtains a percentage that would establish how much money should be kept in reserve. There were five risk weights set out in Basel I:

- 0 percent which included cash, home government and central bank debt as well as Organisation for Economic Co-operation and Development[103] (OECD) debt
- 0, 10, 20 or 50 percent which included claims on domestic public entities, but excluded central government. The percentage is at a nation's discretion
- 20 percent which included public institutions and several forms of OECD debt
- 50 percent which included residential mortgages
- 100 percent which included all other claims and non OECD bank debt[104]

[102] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 3.
[103] An economic organisation consisting over many countries so that economic progress can be made and assist with world trade.
[104] See Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards' (July 1988, Updated to April 1998) http://www.bis.org/publ/bcbsc111.pdf page 17-18 for exact list, accessed 1 January 2015.

Seemingly there are five categories whereby assets are separated in terms of risk, sometimes referred to as five buckets, as Wandhofer puts it.[105] A basic approach can be extrapolated from this position as Cranston et al. articulate, 'The Basel I framework established a relatively simply methodology for risk-weighting with only five risk weights…'.[106] This opinion resembles the one made by Gup and that it was simplistic in form and nature. Perhaps the reason for this was that banking regulation was in its infancy at the time. Furthermore, there was a lack of commentary in this area combined with limited financial expertise and academic debate. In the end Goodhart asserts that the approach taken was more on what the major banks were doing at the time.[107] It seems that the main aim at this time was to create a general consensus. The consequence of this can be seen in the simple risk weight categories. Over time this simplicity would fail.

To complement the risk weights there were two minimum standards that a bank should adhere to in terms of capital adequacy requirements, they were assets to capital multiple and risk based capital ratio. The first standard was an overall measure of a bank's capital adequacy, whilst the latter standard was the credit risk for on and off balance sheet asset

[105] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 96.
[106] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 41.
[107] Private meeting, Professor Charles Goodhart, 4 September 2015 LSE, London. Goodhart was of the opinion that banking was in its infancy, and that there was a lack of commentary from various professionals at the time. The question posed was not in relation to the risk weight percentages but more the question of whether the Basel Committee were trying to reach a general consensus as opposed to a detailed Accord.

categories. A description of these two measures will be explained to provide clarity.

Assets to capital multiple is a simple equation of dividing a bank's total assets by its total capital. The maximum multiple allowed was .20 and whilst only large off balance sheet activities would really engage this multiple, it was not the first standard that constrained a bank the most. It was the second standard that could be the most constricting.

Risk based capital ratio, also known as the Cooke Ratio,[108] was the real driving force of Basel I and one that really showed signs of inadequacy as well as constraint for a bank. This equation was the ratio of capital to risk weighted on balance sheet assets and off balance sheet risk. It was a requirement that a bank should calculate their RWA according to the different types of risk weighting. Once complete, a bank should then set aside a flat fixed percentage to combat credit risk which was 8 percent. An example of risk based capital ratio is explained by Balthazar, '…a bank buys a 200 EUR corporate bond on the capital market, the required capital to cover the risk associated with the operation would be: 200 EUR x 100% (the weight for a claim on a corporate) x 8% = 16 EUR'.[109] The example explained by Balthazar illustrates the basic formula of how a bank would calculate risk in relation to assets. It is a simple process whereby the

[108] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 118.
[109] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 18.

asset is multiplied by the risk weighting of that asset, it is then multiplied again by the minimum 8 percent stipulated by the Basel Committee. It will be highlighted in the weaknesses section of this chapter that whilst this formula is simple to follow and implement, there are consequences, one of them being OECD categorisation.

It can be ascertained from what has been discussed that Basel I was centered on capital adequacy and credit risk. To further bolster Basel I, the Basel Committee created and defined Tier 1 and Tier 2 capital. Tier 1 and Tier 2 capital[110] are two-forms of equity that are held by a bank in relation to RWA and how much a bank should put in reserve to combat credit risk. Additional enhancements were made to Basel I several years later, most notably market risk which allowed for potential losses, particularly from trading businesses.[111] A third tier was added to aid this development and consisted of short term subordinate debt. Before looking at the strengths and weaknesses of Basel I, it is necessary to articulate the three tiers that Basel I endorsed so that a deeper understanding can be obtained and context given.

[110] See R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 98-102 for further discussion.

[111] Bank for International Settlements 'Overview of the Amendment to the Capital Accord to Incorporate Market Risks' http://www.bis.org/publ/bcbs23.pdf accessed 1 January 2015.

Tier 1 capital otherwise known as core capital, includes equity capital and published reserves.[112] Tier 2 capital, or supplementary capital, contained all other elements that ranged from undisclosed reserves to subordinate term debt.[113] It was stipulated in Basel I that Tier 1 and Tier 2 capital should constitute at least 8 percent of RWA. It was stated further that at least 4 percent of this should be in the form of Tier 1 capital.[114] In practice the capital levels of those banks that are regulated normally exceed the aforesaid requirements[115] and this is due to several factors such as competitors, CRAs and adherence to the Basel regulations. It should be noted that this does not mean that Tier 1 and Tier 2 capital are insignificant, quite the contrary, it would suggest that Basel I focused too narrow on credit risk.

During the early 1990s there were complaints that the risk weighted categories were too narrow and did not take into account of other aspects of risk, such as market or liquidity risk.[116] The consequence of this, for instance, was that trading books of banks increased greatly. The Basel Committee realised that there was a gaping hole in Basel I in the form of

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[112] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards' (July 1988, Updated to April 1998) http://www.bis.org/publ/bcbsc111.pdf page 3-4 accessed 1 January 2015.
[113] Ibid page 4-6.
[114] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards' http://www.bis.org/publ/bcbs04a.pdf page 14 accessed 1 January 2015.
[115] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 121.
[116] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 38.

market risk; [117] market risk was still prevalent when Basel I was published, however it was not included at first publication. Market risk was aided by Tier 3 capital and created through the Market Risk Amendment in 1996.[118] This was implemented in 1998 and it can be ascertained that this natural progression began several years prior to this date following a G30 report that was published in 1993.[119] On this basis the main point to capture was that market risk was added to Basel I and extended the risk weighted capital requirement. As such, Tier 3 capital was born in order to support market risk. For the first time this allowed banks to utilise internal models rather than the previously created framework.[120] In the author's opinion this was the starting point for internal based model utilisation and the encouragement to use such measures in the future. As will be explained in later chapters there are now several internal based models when it comes to credit, operational and market risk.

In light of the discussion around market risk, Tier 3 sub-supplementary capital was included to help cover market risk. Market risk was defined by the Basel Committee as, '…the risk of losses in on and off-balance-

[117] Bank for International Settlements, 'Overview of the Amendment to the Capital Accord to Incorporate Market Risks' http://www.bis.org/publ/bcbs23.pdf accessed 19 August 2015.
[118] Bank for International Settlements, 'Amendment to the Capital Accord to Incorporate Market Risks' http://www.bis.org/publ/bcbs24.pdf accessed 1 January 2015.
[119] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 127-129.
[120] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 39.

sheet positions arising from movements in market prices'.[121] It can be argued that this type of risk should have been included when Basel I was originally published. It should be appreciated that market risk encapsulates a bank's trading book and most of these assets are liquid and can be sold very quickly in order to alleviate any risk, therefore, it is a lesser risk compared to credit risk. This could be construed as to why it was not incorporated from the outset but included ten years later. The positive from this is that the Basel Committee identified a weakness of Basel I and rectified with the Market Risk Amendment. It should be acknowledged that Tier 3 capital became defunct in Basel III, but market risk has continued to be included in Basel III and falls under VaR. This will be discussed in Chapters 3 and 4 of the research.

Strengths and weaknesses

A brief description of the positive and negative aspects of Basel I will now be highlighted. It will explain why Basel I was superseded and provides an overview of the by-products that came from Basel I. It should be appreciated that whilst many criticised Basel I for being too simplistic, there were many strengths within it and these will be discussed next.

[121] Bank for International Settlements, 'Amendment to the Capital Accord to Incorporate Market Risks' http://www.bis.org/publ/bcbs24.pdf page 1 accessed 11 January 2015.

Strengths

First and foremost, it is indisputable that Basel I created a benchmark for banking regulation, as Barr and Miller purport, '…Basel I is one of the most successful international regulatory initiatives ever attempted'.[122] Whilst it was originally envisaged to be implemented by the G10 states and internationally active banks within that category, it reached a wider audience in that it encouraged more than one hundred countries to adopt and implement.[123] Many adopters being non-G10 countries which is a true testament to Basel I.[124] By creating one uniformed document to govern the banking industry, it enabled the G10 and associated banks to come together and share a general consensus on financial stability. Under the umbrella of a forum for dialogue, financial stability could be enhanced and supervisory expertise shared, after all this is what the Basel Committee thrive to achieve.[125]

Secondly, the minimum capital ratios that a bank held rose from 9.3 percent in 1988 to 11.2 percent in 1996[126] because of Basel I, and this

[122] M S Barr and G P Miller, 'Global Administrative Law: The View from Basel' (2006) 17(1) EJIL 15, 17.
[123] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 32.
[124] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 39.
[125] Bank for International Settlements, 'A Brief History of the Basel Committee' http://www.bis.org/bcbs/history.pdf page 1 accessed 25 February 2015.
[126] Bank for International Settlements, 'Capital Requirements and Bank Behaviour: The Impact of the Basle Accord' http://www.bis.org/publ/bcbs_wp1.pdf page 2 accessed 11 January 2015.

can only be viewed as positive considering some of the percentages that banks were holding prior to this point. As Zaher points out, perhaps this was partly due to the fact that previously there was not one single definition of bank capital[127] and by doing so all those involved would be on the same page. To put it in a monetary context, Alexander et al. state that, '…the Capital Accord resulted in U.S. banks adding $20 to $50 billion to their capital reserves in the 1990s, while Japanese banks added an estimated $40-$45 billion and French banks added $15 billion over the same period'.[128]

Considering that one of the main aims was to set a minimum capital ratio for every bank under its remit, then the rise in minimum capital percentages can only be viewed as positive.

Thirdly, the creation of a compact and simple risk weighting table that gave different asset categories helped define and improve previous systems that were in place around the world such as equity to asset ratios (total shareholders equity over total assets), for example. Indeed, there was no differentiation between categories or types of loan with the equity to asset ratio system. Basel I is often criticised for its simplicity,[129] however the basic structure not only provided guidelines for banks, it also

[127] Fadi Zaher, 'How Basel 1 Affected Banks' http://www.investopedia.com/articles/07/baselcapitalaccord.asp accessed 11 January 2015.
[128] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 55.
[129] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press, 2017) 41.

provided a straightforward system to allocate each type of asset. In return a percentage was established so that a bank could allocate funds appropriately.

In many scenarios it is far easier to see weakness than strength. It should not be forgotten that Basel I was the first building block in creating a stable banking environment. As Wandhofer notes, '…a key building block of the current Basel III accord'.[130] It was a crucial development and the best strength of all was that it created a foundation for financial stability. Equally, Walker notes:

> '…it constituted the first significant agreement in the regulatory area while it fundamental simplicity promoted easy adoption and widespread compliance…a remarkable achievement especially for a document without any formal legal status and one issued by a Committee that itself has no formal authority or standing in international law'[131]

It does, therefore, play an important role. As Barr and Miller correctly state, '…the Basel Committee play an important role in harmonizing

[130] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 96.
[131] G A Walker, *International Banking Regulation Law, Policy and Practice* (Kluwer Law International 2001) 572.

capital standards, in improving and coordinating prudential supervision and in providing global public goods of information and good office'.[132]

Weaknesses

Criticisms can be drawn from Basel I and it would be naive and unfair to conclude that it would never need improving. In fact, the Basel Committee stated, 'The Accord was always intended to evolve over time'.[133] Drawing conclusion that the Basel regulations will always need constant improvement and amendments. After all, it is a document that needs to remain up to date and relevant as time passes. Basel I in today's financial environment is very different to that of the late 1980s through to early 2000s which it operated in.

Some of the main weaknesses that surfaced will now be discussed leading to the conclusion that Basel I would eventually become outdated.[134] The problem was that Basel I lagged behind new risk management and mitigation techniques, and arbitrage was not tackled appropriately.

Firstly, Basel I assumed that all corporate borrowers regardless of size or characteristic, posed the same credit risk. Crouhy et al. are of the opinion

[132] M S Barr and G P Miller, 'Global Administrative Law: The View from Basel' (2006) 17(1) EJIL 15, 22.
[133] Bank for International Settlements, 'A Brief History of the Basel Committee' http://www.bis.org/bcbs/history.pdf page 2 accessed 24 January 2015.
[134] S Gleeson, 'A Journey from Basle to Brussels' (1999) 14(9) JIBL 275, 275.

that what this meant in practice was that a loan to an AA rated company would require the same amount of capital set aside for a B rated company.[135] Giving the impression that both, although rated differently, shared the same risk. Obviously, this was an inappropriate tool that lacked sophistication, a belief reinforced by many, Fawcett stated, 'The Accord now appears inadequate for its task. In particular, its methodology for measuring risk is rigid and based on assumptions that do not accurately reflect economic realities…'.[136] What can be deduced from this is that economies changed since the creation of Basel I and over time the banking industry metamorphosed into something much larger than it once was. Furthermore, if one company is rated by CRAs as AA and another company as B, then both should not be comparable in terms of risk. In addition and due to the aforesaid, Ojo is of the opinion that Basel I effectively rewarded risky lending by allowing banks to put the same amount of monies aside whether the borrower was questionable or sound.[137] Ojo is right, additionally this could mean that consequences would follow such as putting banks into deep waters when it came to the quality of clients and the money being put aside for those transactions i.e. not a true reflection of the risk, in turn this could result in substantial financial losses.

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[135] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 122.
[136] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 8.
[137] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 307 quoting The Economist.

Secondly, Basel I did not allow for complex issues within a portfolio.[138] This meant a bank could put aside capital for a one £1 million loan and also set aside the same capital for a hundred different corporate loans totalling the same. Yet whilst the one £1 million loan might cause problems, it is highly improbable that the hundred different corporate loans totalling the same would cause an issue all at once. This shows that there was no ability within Basel I to differentiate between the two scenarios and corroborates the statement made by Fawcett earlier. Again, this weakness highlights the rigidness and inability of Basel I to differentiate different scenarios. In the end this would contribute to the demise of Basel I.

Thirdly and the most nonsensical of all, is the poor definition given to risk weighted factors. Barth et al. suggest that a consequence of this is that claims to different OECD countries received the same weighting,[139] irrespective of the country rating. Barth et al. rightly point out that not all governments pay equal and on time, which causes further problems. In addition to this, Baumgartner postures that the result of this is that a bank may not have sufficient equity in times of crisis.[140] Wong agrees with this point and also adds that preferential treatment was given to

[138] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 123.
[139] J R Barth, G Caprio Jr and R Levine, *Rethinking Bank Regulation: Till Angels Govern* (Cambridge University Press 2008) 68-69.
[140] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 6.

OECD claims.[141] Arguably, another serious loophole within Basel I and one which baffles a logical approach. The author would state that the risk weighting of the United States, a well established economic power, is different to India, a rising economic power but still establishing. Therefore, OECD is flawed and the weighting of OECD claims are not accurate.

Fourthly and following on from the third weakness, is the simplistic banding of risk weighting.[142] This meant that many banks were engaging in arbitrage[143] and in effect this contributed to Basel I being overhauled. This links to the earlier example given of OECD countries being given the same rating regardless of the countries' qualities and inequalities. Adding to the simplistic banding issue, Walker notes that the 100 percent classification banding was baffling and that the credit assessment rating system in place was effectively undermined as a consequence.[144]

Fifthly, the ability by banks to manipulate Basel I protocol in respect of maturity factors.[145] For example, the capital required for a bank to put aside for a term less than one year was zero, if the facility was over one year then this created large capital charges. Therefore, many banks

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[141] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 201.
[142] S Gleeson, 'A Journey from Basle to Brussels' (1999) 14(9) JIBL 275, 275.
[143] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 99-100.
[144] G A Walker, *International Banking Regulation Law, Policy and Practice* (Kluwer Law International 2001) 572.
[145] See M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 122-123.

decided to create short term facilities that were under one year to avoid large capital charges. In this instance the bank would not need to put capital aside and could roll over the facility into the following year as a revolving credit facility, thus avoiding the cost of putting capital aside as well as still being able to offer lending facilities to clients. Needless to say, this type of behaviour was substantially problematic and risk prone. In essence, a bank could avoid regulatory rules and banks would not be reprimanded i.e. Basel I did not cover this blatant misbehaviour, which meant that a bank would be able to manipulate in order to safeguard them self.[146]

The final weakness to consider is lack of enforceability. It has been mentioned in this chapter that Basel I created a set of supervisory guidelines and would be implemented at domestic level. It has been argued that Basel I had a weakness of enforceability and this is due to the Basel regulations being, what is coined as, soft law.[147] As Quillin affirms, 'The Basel Committee does not possess any legal enforcement authority and states comply with the Accord at their own discretion'.[148] Whilst Basel I created a set of clear and simplistic set of guidelines for banks to follow, it was and is non-enforceable by law and is only a set of key recommendations for stronger financial stability. It is a harsh criticism because the Basel Committee never intended the Basel

[146] Ibid 122-123.
[147] A A Hall, 'International Banking Regulation into the 21st Century: Flirting with Revolution' (2000) 2(6) JIFM 216, 231.
[148] B Quillin, *International Financial Co-Operation: Political Economics of Compliance with the 1998 Basel Accord* (Routledge 2011) 24.

regulations to be a legal document, far from it, the Basel Committee entrusted countries to incorporate the Basel regulations into national law and not abuse those recommendations. After all, it is a forum for dialogue.[149]

It should be appreciated that it is not feasible for the Basel regulations to be a legal document considering the scale in which it operates, although in terms of Europe and the European Union[150] (EU), the Basel regulations are stronger in that the regulations have been incorporated into EU law.[151] Due to the very nature in which the EU operates, those countries that have signed and been ratified must abide by those laws; to varying degrees. On this basis, the Basel regulations within the EU can be interpreted as being a much stronger tool for implementation in the sense that within the EU there are currently (as of early 2019, the United Kingdom is scheduled to exit in March 2019) 28 member countries that

[149] Basel II and III are also legally non enforceable. It should be noted that whilst mentioned as a criticism here, which could be argued for Basel II and III, it will not be discussed in later chapters simply because, it is not feasible to enforce such a document as it would not be possible for the Basel regulations to comply with different jurisdictions, among other reasons. Additionally, respective countries will implement through domestic law thus bypassing a need to make the Basel regulations hard law.

[150] The European Union is a political and economic union of countries currently standing at 28.

[151] Bank of England, 'Capital Requirements Directive IV' http://www.bankofengland.co.uk/pra/Pages/crdiv/default.aspx accessed 25 February 2015.

will apply the CRD.[152] Whilst the Basel regulations are designed for internationally active banks, within the EU this applies to all banks.[153]

It can be argued that due to some countries implementing Basel I earlier than others, there was an un-level playing field[154] and that this goes against the idea of equality. The BIS explained:

> 'There was strong recognition within the Committee of the overriding need for a multinational accord to strengthen the stability of the international banking system and to remove a source of competitive inequality arising from differences in national capital requirements'[155]

However, it should be highlighted that Basel I did achieve one of its main aims which was to create a minimum 8 percent capital ratio. As Gup suggests, this in itself created a level playing field[156] and its international

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[152] The Capital Requirements Directive, or CRD for short, is an EU legislative package that details prudential rules for banks. It is currently named CRD IV and is made up of the Capital Requirements Directive (2013/36/EU) (CRD) and Capital Requirements Regulation (575/2013) (CRR). The former must be implemented through national law, the latter is applicable to firms across the EU. It is most prevalent in regard to Basel III in its current form (CRD IV) and aims to apply Basel III rules and protocol across the EU member countries.

[153] See R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 152-157 in relation to Basel III, but can be applied to previous iterations.

[154] Meaning that banks in one country may be more aligned to Basel I compared to banks in another country where the implementation of Basel I has not been adopted to the same level – resulting in an un-level playing field.

[155] Bank for International Settlements, 'A Brief History of the Basel Committee' http://www.bis.org/bcbs/history.pdf page 2 accessed 24 January 2015.

[156] Benton E Gup, 'Testimony before the U.S. House of Representatives, Committee on Financial Services, Subcommittee on Financial Institutions and Consumer Credit'

presence created the same.[157] This is true, furthermore the author would agree with Gup and Cranston and that by creating a minimum 8 percent capital ratio, all banks incorporating the Basel I measures will be better aligned and fears of an un-level playing field will be appeased.

It should be noted at this stage that the argument of enforceability will not be pursued further as over time, and in practice, the Basel regulations do become enforceable once a national bank regulator endorses them. In addition, Haynes argues that member states' governments adopt the Basel regulations further and seem to take little persuading in this regard.[158] So, whilst there may be some argument that the Basel regulations lack enforceability, in reality it is not really an issue and in time becomes law. Thus, the issue of enforceability is moot.[159]

Out of the six weaknesses only the last does not allude to a reoccurring problem for Basel I, and that was calculating risk due to it being rigid and based on inaccurate data that failed to mirror current economic conditions.[160] Furthermore, distorting those risks were highly prevalent

http://financialservices.house.gov/media/pdf/061903bg.pdf page 1 accessed 25 February 2015.

[157] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press,2017) 41.

[158] Private meeting, Professor Andrew Haynes, 7 March 2018 University of Wolverhampton, Wolverhampton.

[159] This is more applicable in Western and developed countries. It does not apply to developing countries, for example, where Basel I is still being used and implemented. The basis of the research is from a developed country angle and therefore the issue of enforceability will not be discussed further.

[160] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 2.

and this was partly due to the basic model of Basel I, but also the bank's behaviour in assessing those risks.

There are three elements that lead to this conclusion. One, there was a poor definition of risk capital. Two, a bank's understanding of risk capital is somewhat different from bank to bank. Three, the combination of the aforesaid two results in misalignment. As such, some banks may attempt regulatory arbitrage in which manipulation occurs so that smaller capital charges are achieved. As Gup explains, '…the simple structure encouraged transactions whose principal benefit was to arbitrage bank capital'.[161] This can be easily solved if the first two elements are more closely aligned[162] and then regulatory capital will compliment economic capital. Simply put, a bank's capital put aside will reflect that of the risks associated more accurately.

Due to arbitrage a further issue resulted, banks argued that if risk is to be measured more accurately then banks should be given permission to create their own internal mechanisms to determine VaR. This in itself is problematic and will be scrutinised in Chapter 4 as it is one of the main risks and shortcomings of Basel III purported by the author. In short, a problem that could occur from banks being given the freedom to create their own internal mechanisms to determine risk is that the complexity

[161] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 3.
[162] A better definition of capital and a general consensus of risk capital across banks.

with which a bank calculates their internal values is hard for many people, even bankers to understand. Gup concurs by adding, '…resulting capital amounts will be difficult to evaluate for adequacy and compliance…'.[163] So if it is difficult for those within banks to comprehend, then the chance of success is severely limited.

As can be seen from the six listed weaknesses, Basel I eventually came to a demise and there was an acceptance in the late 1990s that Basel I had become outdated and left behind due to developments in risk management and other key protocols.[164] It should be stressed that Basel I is still used in many developing economies as a basis for financial stability and Basel I should not be underestimated nor should it be undervalued as it enabled Basel II to come to fruition and provided a foundation for a stronger financial system. It also guided those countries that were trying to develop a more stable economy.

Perhaps the best outcome from Basel I was that it encouraged many banks to operate more sensibly. As Ojo states, '…the Basel Capital Accord…established minimum capital requirements for internationally active banks and was able to increase capital levels during this period…'.[165] Ojo is correct, by creating a minimum level for banks to adhere to resulted in banks operating with similar standards and it thus

[163] B E Gup, 'Basel II: The Roar that Moused' in G G Kaufman, *The New Basel Capital Accord* (Thomson 2004) 43.
[164] S Gleeson, 'A Journey from Basle to Brussels' (1999) 14(9) JIBL 275, 275.
[165] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 311.

promotes a more sensible and stable environment. Furthermore, as Walker notes, 'Until the establishment of the Basel (originally the Basle) Committee there had been no formal mechanism for the development of cross-border supervisory co-operation in connection with the activities of international banks'.[166]

On reflection, Basel I did achieve the two objectives set; raising capital and creating a more level playing field.[167] Unfortunately, a more sophisticated financial market developed, and Basel I essentially promoted risk based arbitrage through internal structures. It was, as Varma puts it, '…crude and fragile…crude in that it did not distinguish between safe loans and risky loans…fragile because these deficiencies could be easily gamed…'.[168] Nevertheless, Basel I should be seen as making a positive contribution and it provided a foundational block on which Basel II and future Basel regulations could develop.

Basel I conclusion

Basel I consisted of three tiers which included:

- Tier 1 core capital

[166] G A Walker, *International Banking Regulation Law, Policy and Practice* (Kluwer Law International 2001) 84.
[167] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 122.
[168] R W Kolb, 'Risk Management Lessons from the Global Financial Crisis for Derivative Exchanges' in J Varma, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 318.

- Tier 2 supplementary capital
- Tier 3 sub-supplementary capital that included market risk

Under Basel I it was stipulated that Tier 1 and Tier 2 capital must represent a minimum 8 percent of RWA of which 4 percent must come from Tier 1 core capital. Tier 3 was introduced several years later in 1998 to combat market risk.

The main focus of Basel I was capital adequacy and this took the form of credit risk and RWA and linked to the three Tiers. RWA was categorised as the following:

- 0 percent for cash and home and central bank debt as well as OECD
- 0, 10, 20 or 50 percent for claims on domestic public entities but excluding central government
- 20 percent for public institutions and forms of OECD debt
- 50 percent for residential mortgages
- 100 percent for all other claims

There were two main approaches given to enable a bank to meet the capital adequacy requirements set by Basel I so that risk could be calculated in conjunction with RWA. These were assets to capital multiple and risk based capital ratio otherwise known as the Cooke ratio. Assets to capital multiple used the equation of dividing a bank's total assets by

its total capital. Risk based capital ratio used the equation of capital to risk weighted on and off balance sheet exposure and assigned to credit risk. Once the risk had been assigned to the risk weighting, a bank could then multiply by the percentage of the risk weighting category and then multiply once more by 8 percent.[169]

In hindsight, Basel I was not sufficiently subtle and accommodating to the ever-changing banking world. However, Basel II was not published until 2004 and as such Basel I was the leading authority for almost two decades and should not be discredited. Furthermore, many developing countries continue to use Basel I.

Basel I was not only revolutionary but provided a platform for Basel II for banking regulation to develop, grow and improve. As Davis states, 'The 1988 capital framework was not intended to be a static document, but to evolve over time'.[170] This is evident with Basel III as the current leading authority and there is no doubt that there will be many more versions. In the end, for the Basel regulations to remain the pinnacle of banking regulation it needs to develop and evolve, importantly it needs to adapt in order to remain relevant and effective.

[169] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 18.
[170] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 22.

The author would summarise Basel I as the first building block to financial stability and that Basel I was never going to be complete at the first attempt. Basel I provided a basis for international financial stability and a general consensus in one document across all nations to respect and adhere too. It would be wrong to assume that Basel I was envisaged to be the complete version and this was purported by the Basel Committee; it is also a logical conclusion. The banking world is changing all the time and it is inevitable that the Basel regulations must also change to stay effective and appropriate. Equally, regulation will develop and change as participants are progressively able to agree.

Whilst the general reaction to Basel I was positive, it did take the coalition of the United States and the United Kingdom to push it forward. This was needed due to the slow progress being made and mainly due to the characteristics of the Basel Committee i.e. unanimity between like-minded persons needing to prevail to proceed.[171] Goodhart was right, a general consensus was required in order for Basel I to come to fruition. The difficulty came from risk weights and the inability to agree between member states to come to an agreed meeting of the minds.

It was necessary to discuss Basel I in this chapter because it paved the way for Basel II which was published just before the financial crisis and has been superseded in recent times by Basel III. The remainder of the

[171] C Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011) 194.

research will discuss Basel II and III with appropriate Basel Committee regulatory work. It should be appreciated that while not mentioned in the research, the Basel Committee have produced other important work in relation to financial conglomerates,[172] electronic banking,[173] and in more recent times financial technology (FinTech).[174] However, the research does not intend to explore these avenues as they are out of scope of the research.

Chapter 2 will move on to discuss Basel II and how it moved forward from Basel I, along with its structure, strengths and weaknesses. By doing so a logical timeline can be illustrated from Basel I to III with the intention that the reader will appreciate how the Basel regulations progressed over time and develop a deeper understanding.

[172] Bank for International Settlements, 'Supervision of Financial Conglomerates' https://www.bis.org/publ/bcbs47.pdf accessed 11 April 2019.
[173] Bank for International Settlements, 'Risk Management Principles for Electronic Banking' https://www.bis.org/publ/bcbs98.pdf accessed 11 April 2019.
[174] Bank for International Settlements, 'Implications of FinTech Developments for Banks and Bank Supervisors' https://www.bis.org/bcbs/publ/d431.pdf accessed 11 April 2019.

CHAPTER 2 - BASEL II

Chapter 1 explained what the research will entail and the aims that will be striven for. It was established what sources of material will be used to make the research successful and what parts in particular would contribute to supporting the research title. A succinct overview was given of Basel I so that the reader could obtain an understanding and foundational appreciation in order for Basel II and III to follow. By delving into part of the history leading to Basel I, a fuller picture was portrayed.

Many years of deliberation occurred before the enactment of Basel I, and several events took place which encouraged and prompted the Basel Committee to take action and publish a document on banking supervision.[175] Whilst Basel I was revolutionary and contained many strengths, it was not free from criticism and had many weaknesses, some of which were discussed in Chapter 1. To lead from this, Chapter 2 will deliver an in depth analysis of Basel II and will split into three areas: Pillar 1, Pillar 2 and Pillar 3.[176] Once these areas have been explored, the strengths and weaknesses of Basel II (and Basel II.5) will be assessed before concluding and moving forward to Chapter 3 Basel III.

[175] C Goodhart, *The Basel Committee on Banking Supervision* (Cambridge University Press 2011) 146-181.

[176] Basel II is known for the three pillared approach. It is, therefore, prudent to focus on the three pillars and separate so that each can be viewed in a coherent manner.

BASEL II - THE BEGINNING OF A NEW ERA

It is fitting to start with a quote from Barr and Miller who state, 'Over time, banks, commentators, and regulators became increasingly dissatisfied with the 1988 Accord as overly rigid, not well-aligned with risk, subject to regulatory arbitrage, politicised, and subject to distortion'.[177] Keeping this in mind, a new era of banking regulation was about to begin.

The New Basel Capital Accord, otherwise known as Basel II, consisted of several consultative documents. The first in 1999,[178] the second in 2001[179] and the final document in 2003.[180] The final proposal was published in 2004[181] with a full comprehensive guide released in 2006[182] and expected implementation date the same year. It was commented at the time that any delay between the arrival of Basel II would be to the detriment of the banking world[183] (from a European perspective). This is because if the rules within Europe were not aligned to internationally

[177] M S Barr and G P Miller, 'Global Administrative Law: The View from Basel' (2006) 17(1) EJIL 15, 24.
[178] Bank for International Settlements, 'A New Capital Adequacy Framework' https://www.bis.org/publ/bcbs50.pdf accessed 3 July 2018.
[179] Bank for International Settlements, 'The New Basel Capital Accord' http://www.bis.org/publ/bcbsca03.pdf accessed 21 October 2015.
[180] Bank for International Settlements, 'The New Basel Capital Accord' https://www.bis.org/bcbs/bcbscp3.pdf accessed 21 October 2015.
[181] Bank for International Settlements, 'Implementation of Basel II: Practical Considerations' https://www.bis.org/publ/bcbs109.pdf 2 April 2015.
[182] Bank for International Settlements, 'Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework Comprehensive Version https://www.bis.org/publ/bcbs128.pdf accessed 2 April 2015.
[183] S Gleeson, 'A Journey from Basle to Brussels' (1999) 14(9) JIBL 275, 276.

based rules then it could weaken the financial system in that regulators and supervisors would not be aligned to up-to-date regulation. Equally, European regulated banks would be at a disadvantage compared to their international competitors. Essentially, arbitrage would be more likely. Gleeson noted that outside the EU, Basel II was implemented much faster than within the EU and this could create problems such as arbitrage and a temporary capital boom. In hindsight this was true but had little effect on the financial crisis, the financial crisis was not extinguished by Basel II and the fact that Basel III came shortly after is recognition that Basel II was not fit for purpose.[184] Alexander et al. suggest that, '…Basel II…disproportionately focuses on the particular economic risks that banks create for themselves and not on the aggregate risk that banks create for the entire financial system'.[185] A criticism put forward prior to the financial crisis. This will be evident over the coming chapter.

Despite these criticisms and in hindsight, Sabalot notes, 'Basel II represents a major revision of the international standard on bank capital adequacy…'.[186]

It was explained that Basel I had many weaknesses that contributed to its overhaul, some of which were explained in Chapter 1. One of the main

[184] On reflection, Basel II arrived at the wrong time. Basel I would have done very little to withstand the financial crisis also.
[185] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 255.
[186]G Walker, R Purves and M Blair, 'International Agreements and Supranational Bodies' in D Sabalot, *Financial Services Law* (4th edn, Oxford University Press 2018) 185.

problems of Basel I was that it did not allow for varying degrees of risk, and it was also regimented in its structure [187] which prohibited adaptability. It was evident that change needed to occur and swift action was required, additionally, Basel I required a complete re-evaluation. It was stated that:

> '…the Basel Committee on Banking Supervision published a consultative paper proposing substantial changes to the existing global consensus on bank capital regulation…This development represents an acceptance by the major bank supervisors that the structure put in place by the 1988 Accord had become dangerously outdated…'[188]

One of those changes was RWA, which under Basel I was simple and constructed in an unsophisticated manner. It was dangerous because it allowed unacceptable incentives for banks when it came to true economic risk during arbitrage and how risk was measured.[189] This could then lead to operational risk problems without reducing other risks and consequently expose the banking system.

The motive for Basel II was to not only improve Basel I but to counter banks' capital regulation and focus on internal controls so that greater

[187] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 1.
[188] S Gleeson, 'A Journey from Basle to Brussels' (1999) 14(9) JIBL 275, 275.
[189] Ibid.

flexibility could be achieved and to enable capital requirements to reflect underlying risk more accurately.[190] It also provided a more sophisticated set of guidelines to combat capital and credit risk. One of the main alterations allowed banks to create their own internal rating models to determine risk,[191] the benefits of such was that lower capital charges could be achieved. Alexander et al. articulate, 'The aim of Basel II is to make the regulatory capital held by banks more sensitive to the economic risks that banks face'.[192]

Basel II maintained the same 8 percent standard of capital to RWA and definition of capital as stated in Basel I.[193] It is interesting to consider whether the definition of capital was still relevant i.e. should the definition have been altered considering that substantial changes were being made to large parts of Basel II? This point was discussed by the Basel Committee, but no change applied,[194] and this will be discussed later in the strengths and weaknesses section.

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[190] Bank for International Settlements, 'History of the Basel Committee' https://www.bis.org/bcbs/history.htm#basel_ii accessed 14 March 2018.
[191] R Gottschalk, *The Basel Capital Accords in Developing Countries: Challenges for Development Finance* (Palgrave Macmillan 2010) 5.
[192] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 40.
[193] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards: A Revised Framework Comprehensive Version' http://www.bis.org/publ/bcbs128.pdf page 12 accessed 2 April 2015.
[194] Bank for International Settlements, 'Basel II: International Convergence of Capital Measurement and Standards: A Revised Framework' https://www.bis.org/publ/bcbs118.htm point 17 accessed 14 March 2018.

At this point it is important to illustrate the three aims stated by the Basel Committee (and by Balthazar)[195] on what Basel II aimed to achieve. These were: the quality and stability of the international banking system was to be improved, to create and maintain a level playing field, and promote and encourage the adoption of stringent practices in risk management. The first two aims existed in Basel I, the third was new. Essentially, Basel II was trying to improve risk management and resilience of the banking industry.[196] By creating a three (pillars) pronged strategy, the objectives were clear. In order to improve the financial system the Basel Committee designed Basel II to focus on internal control and management and an emphasis was placed on a bank's internal models. This was further supported by a supervisory review process and market discipline. It can now be appreciated that Basel II would become more structured than its predecessor.

It can be appreciated that a huge transition was taking place from a ratio based approach (Basel I) to one that focused on the alignment to internal management, models and practices. The end result being a more risk sensitive approach,[197] in line with the statement made by Alexander et al. above.

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[195] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 39-40
[196] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 123.
[197] RBC, 'Basel II and III Disclosures' http://www.rbc.com/aboutus/RBCFBV-index.html accessed 14 March 2018.

One of the main differences and improvements was that Basel II became more flexible and risk sensitive.[198] Gup was partly right, it was different to Basel I in that it became more flexible and the approach taken was geared toward being more risk sensitive. In theory it would be effective, in practice not so much. Furthermore, Basel II developed the over simplistic category of classes in which risks were attributed (0-100 percent),[199] adding more depth and clarity. The development of risk weighting can be viewed positively for the simple reason being that the risk weight categories and processes were basic and lacking depth to calculate risk correctly.

Like Basel I, Basel II continued to be a set of guidelines which applied to G10 countries and internationally active banks. The intention being to reach more than one hundred countries, in line with its predecessor, so that greater stability and parity could be attained.[200] That being said, it will be discussed shortly that parity and a level playing field may not have been achievable due to the EU applying the Basel regulations to both investment firms and banks, and the United States not doing so.[201] If countries in Europe were incorporating most of Basel II and the United States the opposite, then this could affect many elements of banking from lending to RWA.

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[198] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 5.
[199] S Gleeson, 'A Journey from Basle to Brussels' (1999) 14(9) JIBL 275, 275.
[200] IMF, 'Implementation of Basel II - Implications for the World Bank and the IMF' http://www.imf.org/external/np/pp/eng/2005/072205.htm accessed 29 July 2015.
[201] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 12.

It is unequivocal that Basel I focused heavily on the idea of a minimum capital requirement model that lacked flexibility and the ability to differentiate between different risk scenarios. To limit this problem it appears that the Basel Committee tried to construct Basel II in a more flexible and robust way and, as Sabalot notes, '…it aligned the capital measurement framework with sound contemporary practices in banking'.[202] To complement and enforce this approach Basel II was split into three areas or three pillars[203] as it was famously known for,[204] they were:

- Pillar 1 Minimum Capital Requirements. Improvements to Basel I to include credit risk, operational risk, and market risk
- Pillar 2 Supervisory Review. Bank capital adequacy and internal processes
- Pillar 3 Market Discipline. To strengthen market discipline and promote solid banking practices

It will be apparent over the coming chapter that all three pillars are dependent on each other. As Docherty and Viort state, '…any one of the three pillars doesn't work without the other two…'.[205]

[202] G Walker, R Purves and M Blair, 'International Agreements and Supranational Bodies' in D Sabalot, *Financial Services Law* (4th edn, Oxford University Press 2018) 185.
[203] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 105-106.
[204] This approach is still used today in Basel III.
[205] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 124.

In order to fully comprehend Basel II, the three pillars will be discussed individually. By dissecting Basel II in this manner a complete picture can be given so that critical evaluation can follow. Once dissected, strengths and weaknesses will be examined.

An interesting point to ponder whilst exploring Basel II over the remainder of this chapter is to consider the viewpoint of Gup who explained why banks fail (from his experience) within the banking world. First, that banks in general have made too many bad loans. Second, these have been accumulated over several years. Third, there has been poor maintenance of these loans. Fourth, that there is a common trait of those bad loans with banks that fail.[206] Some of these points will be alluded to throughout the remainder of this chapter. It will become apparent that some of these points are intertwined and that Basel II had very little effect on limiting these problems.

PILLAR 1 - MINIMUM CAPITAL REQUIREMENTS

Background of minimum capital requirements that began with Basel I

Pillar 1 overlaps with the discussion that has already taken place in Chapter 1 where it was explained how Basel I was constructed. In order to reinforce this point and to explain the enhancements made by Basel

[206] B E Gup, 'Why and How Banks Fail-Would 8% Capital Make a Difference?' in B Branch, *The New Basel Capital Accord* (Thomson 2004) 32-36.

II, the background of minimum capital requirements will be briefly expounded before detailing the structure and alterations that were made.

It was noted earlier that the Basel Committee predated the enactment of Basel I and was born in 1974 to include the G10. This was primarily due to the failure of the German bank Bankhaus Herstatt, amongst other issues and events. The Basel Committee focused on information sharing and there was an overall desire to achieve a forum for dialogue. As time passed it became increasingly apparent to the Basel Committee that there was a need to create a set of guidelines to prevent bank failures which developed due to a fear of insufficient capital to counteract large losses which could arise from financial downturn or poor banking methods. This concern heavily shifted towards Japan during the 1980s as Japanese banks were expanding around the world at a phenomenal rate. The rapid expansion alarmed the Basel Committee because the valuations of many Japanese banks consisted solely on valuations of capital.[207] As Gup explains, '…valuations of capital that included large amounts of unrealized capital gains from rapid increases in the values of Japanese stocks that they owned',[208] thus increasing the possibility of several banks collapsing. In addition, the Latin American debt crisis added to the

[207] See J R Barth, G Caprio Jr and R Levine, *Rethinking Bank Regulation: Till Angels Govern* (Cambridge University Press 2008) 64-65.
[208] B E Gup, 'Basel II: The Roar that Moused' in G G. Kaufman, *The New Basel Capital Accord* (Thomson 2004) 40-41.

concerns surrounding capital ratios and the decline in large international banks.[209]

Due to concerns surrounding Japan and banks within Latin America, the Basel Committee began to look at international regulation and what could be done to regulate the banking industry. The capital standards idea developed herein and eventually evolved into Basel I; the first iteration was also (to a large extent) a response to the declining capital levels in international banks which was equally a huge concern for the Basel Committee.[210]

The most important outcome that came from Basel I in relation to minimum capital requirements was that it put in place a formula that enabled banks to allocate capital to risk in a simplistic way and whilst many criticisms can be drawn from this it was revolutionary for its time, especially in comparison to previous mechanisms such as leverage ratios[211] that mainly looked at total assets.[212] Basel I included on and off balance sheet assets and used the results to then allocate a risk factor. In Chapter 1 it was explained that there were five risk categories that ranged from 0-100 percent and those assets would be placed into one of these categories depending on the type of risk. Basel I further stipulated

[209] Bank for International Settlements, 'History of the Basel Committee' https://www.bis.org/bcbs/history.htm accessed 14 March 2018.
[210] A Fawcett, 'New Basel Accord Raises Questions' (2003) 33 Euro. Law. 12, para 2.
[211] Leverage ratio was basic in that it looked at total debt to total assets. It did not account for, for example, equity of assets financed by debt.
[212] Investopedia, 'Total Debt to Total Assets' http://www.investopedia.com/terms/t/totaldebttototalassets.asp accessed 19 June 2015.

that a bank should hold a minimum 8 percent to RWA and this was known as risk based capital.

Criticism unravelled over the coming years with many commentators stating that risk based capital was too rigid, inflexible and that it was not realistic.[213] One of the consequences that came from this was that a bank could manipulate parts of Basel I.[214] Nevertheless, Basel I was implemented by many leading countries around the world and many countries still implement Basel I in recent times.[215] One assumes that the adoption was partly due to political pressure,[216] but also because there was no leading document at the time that brought banking regulation together under one document, and for this reason Basel I should be commended. That being said there were improvements to be made and as the years passed and criticisms mounted, the Basel Committee deliberated on how Basel I could be strengthened. Credit risk weights were to be modified and three alternative methods were given that would provide better results for calculating minimum capital requirements. The

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[213] B E Gup, 'Basel II: The Roar that Moused' in G G Kaufman, *The New Basel Capital Accord* (Thomson 2004) 41.
[214] Mike Mariathasan and Ouarda Merrouche, 'The Manipulation of Basel Risk Weights. Evidence from 2007-2010.' http://www.centralbank.gov.cy/media/pdf/NPWPE_MARIATHASAN_MAY2012.pdf accessed 11 June 2015.
[215] Anupam Prakash, 'Evolution of the Basel Framework on Bank Capital Regulation' https://rbi.org.in/scripts/bs_viewcontent.aspx?Id=2023 accessed 8 May 2015.
[216] Peterson Institute for International Economics, 'Basel I' http://www.piie.com/publications/chapters_preview/4235/03iie4235.pdf page 50-51 accessed 11 June 2015.

same was done for operational risk, a new measure created. These as well as other key changes will now be discussed.

Basel II and the key changes to Pillar 1 minimum capital requirements

Balthazar explains that Pillar 1 and minimum capital requirements was deemed the most crucial part of Basel I due to it being the principle buffer to protect a bank against financial losses.[217] This is logical considering that having sufficient capital to counter large capital losses is the primary way to defend against a financial crisis. Needless to say, it also needs to be liquid.[218] The sole focus of the Basel Committee and capital remained in Basel II in relation to which Pillar 1 is analysed.[219] The 8 percent requirement continued but under Basel II the RWA were refined. Pillar 1 further stipulated different reserve recommendations for different banks because it was deemed that each bank will vary in terms of their asset portfolio,[220] because large international banks will be very different to small to medium sized banks. Additionally, a third risk category was introduced to coincide with credit and market risk, this would be coined

[217] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 44.
[218] Capital has been the foundational rock for banking regulation for many years however, it will be explored in Chapters 4 and 5 that having high amounts of capital is not sufficient to protect a bank when a financial crisis occurs. Other factors need to be considered such as how much liquidity a bank possesses.
[219] J R Barth, G Caprio Jr and R Levine, *Rethinking Bank Regulation: Till Angels Govern* (Cambridge University Press 2008) 69.
[220] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 116.

operational risk.[221] As Lopez highlights, this addition would enable Pillar 1 to become more risk sensitive.[222] After all, this was a weak point for Basel I.

Whilst devising Basel II, the Basel Committee created methods to determine and calculate credit risk more effectively. On this basis Basel II made two notable changes relating to minimum capital requirements. Firstly, the Basel Committee introduced and extended enhancements to calculate risk. This included market risk which incorporated the Market Risk Amendment 1996 from Basel I, and operational risk which was a new measure.[223] Secondly, key changes were made to credit risk whereby Basel II improved the previous Standardised Approach and created two new approaches in respect of the internal ratings model.[224]

In order to explain Pillar 1 and highlight the key changes made, it is necessary to separate Pillar 1 into three areas that minimum capital requirements apply to: credit risk, operational risk and market risk. It should be acknowledged that the different approaches used were deliberate so that lower capital requirements could be achieved when

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[221] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 308.
[222] Jose A Lopez, 'Disclosure as a Supervisory Tool: Pillar 3 Basel II' https://www.frbsf.org/economic-research/publications/economic-letter/2003/august/disclosure-as-a-supervisory-tool-pillar-3-of-basel-ii/ accessed 14 March 2018.
[223] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 44-45.
[224] Ibid.

moving from the basic approach in all three to the most complex in all respective three. It can be viewed as an incentive by the Basel Committee to encourage banks to increase their risk management standard procedures[225] in the hope that all banks will strive to reach the more complex models.

Pillar 1 - Credit risk

Credit risk is the largest component of Pillar 1 and arguably the most significant of the three pillars in trying to accomplish stability as well as prevent financial collapse. Gleeson states, 'Of all the risks that banks are exposed to, credit risk is the most important and the most intuitively obvious'.[226]

Credit risk can be defined as, '…the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms'.[227] Therefore, banks must allocate funds to both on and off balance sheet items that in turn produce a RWA value.[228]

[225] Bank for international Settlements, 'The regulatory framework: balancing risk sensitivity, simplicity and comparability' https://www.bis.org/publ/bcbs258.pdf page 6-8 accessed 15 March 2018.
[226] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 73.
[227] Bank for International Settlements, 'Principles for the Management of Credit Risk - Consultative Document' http://www.bis.org/publ/bcbs54.htm accessed 11 April 2015.
[228] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 6.

It is important to remember that credit is not limited to loans, it covers many other facets ranging from lending money in the future to buying debt securities.[229] Accordingly, credit exposure and credit risk are an essential part of everyday transactions for banks. This is because the two bear significance on effective risk management and are essential for long term stability.[230] In modern day banking the old maxim, '…lend on the credit, not the security…'[231] is regularly broken. One of the reasons for this is that not all financial transactions are credit transactions. Credit expands beyond the concept of loan exposures, as explained above it covers other aspects such as buying debt securities and in fact many financial transactions will involve some form of credit risk. Perhaps this is the main problem with banks in the modern era and that banks have moved away from the general practices that were originally founded upon.[232] Although it is unfair to suggest as banking, like many other fields changes over time, and naturally morphs into new realms. Adapting to the environment is essential, the byproduct is that the type of transactions and ways of translating do as well.

In this area there is high usage of internal and external rating agencies that try to reduce the probabilities of default. This is a significant change

[229] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 73-74.
[230] Bank for International Settlements, 'Principles of the Management of Credit Risk' https://www.bis.org/publ/bcbsc125.pdf page 1 accessed 15 March 2018.
[231] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 73.
[232] See R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 23-26 in particular shadow banking.

from Basel I but does not pass without fault, this will be highlighted in the weaknesses section. Needless to say, the Basel Committee believed and encouraged the use of CRAs as a form of objectivity and accuracy, which in turn would reflect the market in true form when it came to bank loans.[233] Credit risk was heavily criticised under Basel I because of the simplistic structure that was used to determine this type of risk i.e. allocation to a risk category, and considering that credit risk forms a large part of RWA,[234] this posed a great problem due to credit risk encompassing more than just loans. Due to this, the Basel Committee improved credit risk with three approaches. Before the aforesaid is analysed, more detail is required to clarify this change.

In terms of credit risk exposure the main problems were losses from default.[235] Potential losses are divided into two parts, probability of default[236] (PD) and loss given default[237] (LGD). The values of PD and LGD are stipulated by a bank's respective regulator if that bank is a small entity. Control and freedom will gradually move towards the bank when they are a much larger entity; producing more flexibility for the bank and

[233] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 441.
[234] Laura Noonan, 'New Bank Safety Plans Criticised for Encouraging Risky Loans' *Financial Times* (London, 6 June 2016) https://www.ft.com/content/e869883a-2bf5-11e6-bf8d-26294ad519fc accessed 15 March 2018.
[235] Bank for International Settlements, 'Principles of the Management of Credit Risk' https://www.bis.org/publ/bcbsc125.pdf page 27 accessed 15 March 2018.
[236] The likelihood of default over a period of time.
[237] If a borrower defaults then a share of this is lost.

models to calculate risk. This explanation can now be applied to the three approaches.

As previously stated, under Basel I there was only one formula that applied to credit exposure. Basel II created three approaches when determining credit exposure.[238] These were:

- Standardised Approach
- Foundation Internal Ratings Based Approach (F-IRB)
- Advanced Internal Ratings Based Approach (A-IRB)

A smaller bank will generally be allowed to use the Standardised Approach to determine RWA, which employs a list of weightings that are based not only on asset type but external credit rating sources. In comparison, a larger bank will be permitted to use the F-IRB approach and in some instances the A-IRB approach if approved. Most large banks will use the third approach as it offers detailed adjustment of capital requirements.[239]

Under the Standardised Approach different risks are assigned to different categories and the approach relied on external rating agencies to

[238] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 41 .
[239] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 105.

determine those risks. This was considered during Chapter 1 in relation to the five categories ranging from 0-100 percent. The approach is almost identical to the one found in Basel I which did not need any input from the bank.[240] The other two approaches, F-IRB and A-IRB, differ in that internal mechanisms are used to measure risk as opposed to external mechanisms. It would seem that Basel II enhanced Pillar 1 credit risk with the F-IRB and A-IRB approaches and this does coincide with the Basel Committee placing more emphasis on internal risk management and models.

These approaches were strengthened further, for instance F-IRB banks could use their own internal models to calculate risk in terms of default risk but regulatory authorities would determine parameters for loss. A-IRB gave even more freedom to a bank in that not only default risk could be calculated but parameter for loss using a bank's own internal models and databases could be utilised. A bank must consider which of the three approaches it is going to use, although the A-IRB approach needs approval by the appropriate regulator.[241] It can be ascertained at this early stage why the A-IRB approach required approval because of the complexity and scope it would give to large investment banks.

Once confirmed a bank may choose to use a basic approach for different types of asset but cannot choose a more complex one. For example, if

[240] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 126.
[241] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 6-7.

Bank A used the F-IRB approach then it could use the Standardised Approach for some of its exposures but could not use the A-IRB approach for any of its exposures. The general philosophy is that a bank will progress to the A-IRB approach, however it is accepted that the most complex method may not always be cost effective and appropriate for all.[242] This is logical considering the qualities of the third approach and that the cost to produce calculations and time to invest as well as proceed calculations would be taxing even on the most large of banks. The three approaches explained will now be detailed further.

Pillar 1 - Credit risk and the Standardised Approach

In theory, regulators will assign risk weights to individual assets with guidance from CRAs to determine allocation, and this is in relation to a banks current outstanding market debt which will reflect both PD and LGD.[243] What this means is that smaller banks will be reliant on this data from regulators and whilst it is similar to Basel I, there are some differences, the main one being that risk weightings were more aligned to market evidence. Otherwise the process was identical to Basel I.

The Standardised Approach includes both expected and unexpected losses; Basel I only dealt with the latter under the market risk

[242] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 75.
[243] B E Gup, 'Basel II: The Roar that Moused' in G G Kaufman, *The New Basel Capital Accord* (Thomson 2004) 42.

amendment protocol and can be viewed as more complex with five groupings of assets.[244] Apart from this and stated above, the approach is essentially the same as it was in Basel I, whereas in contrast Basel II endeavoured to make this area more risk sensitive. For example, the bank allocates the risk weight to each of its assets, as well as off balance sheet assets, and the end result is the risk weighted asset values for that bank. As Crouhy et al. put it, '…a risk weight of 50 percent means that an exposure is included in the calculation of risk-weighted assets at 50 percent of its full value, which then translates into a capital charge equal to 8 percent of that value or, equivalently, to 4% (=8% x 50%) of the exposure'.[245]

Compared to Basel I, the risk weightings were more aligned to market evidence which positively cover a far wider range than Basel I encompassed. Arguably this was an important improvement for banking regulation because by aligning those risks more closely to the bank a more accurate picture can be derived. This would, in theory, reflect the credit risk of a bank in a more precise manner and that would further mean that the bank would be able to allocate an appropriate figure against their risks. There are similarities that can be drawn with Basel I in this respect, however, these categories are more in line with market and economic information gathered from wider sources in contrast to

[244] Ibid.
[245] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 132.

Basel I.[246] An enhancement that highlights how Basel II improved this part of banking regulation and strengthened the area of credit risk.

Whilst criticisms can be applied to the Standardised Approach, many of which share the same problems as Basel I,[247] the simplicity of this mechanism and that it only applied to small banks was very much a strength.

Pillar 1 - Credit risk and the Foundation Internal Ratings Based Approach (F-IRB)

F-IRB was intended for larger banks. Most banks can determine their own risk but may require assistance for other risks which are calculated by the regulator. Since Basel I, capital requirements and F-IRB are no longer classified as global risk weights aligned with external ratings.[248] This approach changed to formulas computed by credit risk models which are then calculated by the bank. The risk parameters that are now used by banks are split into several areas[249] and allows for more diversity.

[246] B E Gup, 'Basel II: The Roar that Moused' in G G Kaufman, *The New Basel Capital Accord* (Thomson 2004) 42.
[247] Ibid. Arbitrary in nature and did not reflect realistic risks to assets.
[248] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 58.
[249] Ibid.

Under F-IRB a bank categorises banking book exposures into five areas: corporate, sovereign, bank, retail and equity.[250] This approach is widely accepted and consistent with solid banking practices.[251] Furthermore, the F-IRB approach has the ability to differentiate between many types of loan, whether it be corporate or retail. F-IRB will base this information on internally created models whereby PD and LGD are obvious. As alluded to by Gup, most banks will use PD for individual loans but use LGD calculations provided by the regulator.[252] To put this into context, a formula will be explained to best illustrate this process which will include a further two abbreviations, exposure at default[253] (EAD) and maturity of facility[254] (M). So, in the F-IRB approach banks will be able to calculate (roughly) the PD associated with each borrower and the remaining calculation will be concluded by the regulator. Here are the stages:

> 'LGD = 45 percent for senior unsecured facilities and 75 percent for subordinate claims; the existence of collateral will lower the estimated LGD
>
> EAD = 75 percent for irrevocable undrawn commitments

[250] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 52 accessed 2 April 2015.
[251] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 134.
[252] B E Gup, 'Basel II: The Roar that Moused' in G G Kaufman, *The New Basel Capital Accord* (Thomson 2004) 42.
[253] Total value a bank is exposed to in the event that a loan defaults.
[254] A maturity date in which a debt comes due, for example.

M = 2.5 years, except for repo-style transactions where the effective maturity will be six months'[255]

It should be kept in mind that the second stage is assuming a conversion factor of 0 percent and is applicable for immediately cancellable commitments or unconditionally cancellable commitments. What can be extracted from this example is that a bank will do part of the calculation for expected future loss and the regulator will input the remaining calculation(s) i.e. everything else after PD. That is why approval is still required for this approach.[256] What this means for a bank is that, in essence, the bank will perform part of the calculation and the regulator will conduct the other half thus providing an end result. By doing so, the partnership between the bank and regulator and that the regulator is approving the process, provides a form of clarity and almost guaranteed nature that the end calculation will be accurate, or at least more accurate compared to the Standardised Approach.

There is still a key emphasis and contribution from regulators in order to safeguard a bank, otherwise it could be argued that a bank would be open to varying degrees of risk, either through carelessness or inexperience. In a broad context, '…supervisors and regulators have a key role to play

[255] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 135.
[256] Ibid.

in stabilizing the regulatory framework…'.[257] If a bank is allowed to go even further with their internal ratings model then the regulator will assess whether the bank can adopt the A-IRB approach.

Pillar 1 - Credit risk and the Advanced Internal Ratings Based Approach (A-IRB)

The A-IRB approach can only be used for the largest of banks where a more sophisticated model is required to determine risk. Similar to F-IRB, the models created would need to be approved by the appropriate regulator.[258] In contrast to F-IRB, banks need to pass intensive standards in relation to their internal rating systems and is judged by the regulator. This has been asserted to be rather discriminatory because gone is the objectivity of a level playing field.[259] If assessed successfully, a bank will be able to determine their own models for both PD and LGD, unlike the F-IRB approach which only allowed the former. It can be accepted that the A-IRB approach goes even further, developing on the F-IRB approach and very distinguishable between the basic Standardised Approach. The idea behind giving bank's a more advanced model to calculate credit risk

[257] Bank for International Settlements, 'BNP Paribas' Response to the Discussion Paper 258 The Regulatory Framework: Balancing Risk-Sensitivity, Simplicity and Comparability' https://www.bis.org/publ/bcbs258/bnpparibas.pdf page 1 accessed 15 March 2018.
[258] B E Gup, 'The New Basel Accord and Advanced IRB Approaches: Is There a Case for Capital Incentives?' in C Brown and K Davis, *The New Basel Capital Accord* (Thomson 2004) 125.
[259] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 106.

is understandable as it gives more control to the bank, but more importantly it allows more accurate results to be derived.

In summary a bank which is approved to use this approach will be able to calculate PD, LGD, EAD and M parameters to loss. Needless to say, these measures should be pre-approved due to the magnitude of responsibility and freedom given to the bank. On this basis, regulators must ensure that a bank's internal processes are robust[260] in order to competently calculate. After all, if the bank does not have the infrastructure and resources in place to conduct such calculations then this could negatively impact the results. This should be picked up by the regulator beforehand whereby the regulator will investigate whether a bank has the right historical data (in-depth) and reliable risk models to use the A-IRB approach.[261] In supporting this goal, Basel II set out minimum operational requirements that should be followed and will compliment an effective implementation of this task.

Similar to F-IRB, a big incentive for a bank to create their own models in calculating risk is that it can lower capital charges.[262] Due to this, it is clear to see why banks would want to create their own risk models as the benefit of lowering capital charges means that funds can be used

[260] B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 105.
[261] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 124.
[262] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 106.

elsewhere. In the end and to reiterate, banks using this model (compared to the F-IRB approach) can see lower capital charges due to the formula used in calculating RWA,[263] thus complimenting the incentive created by the Basel Committee to reach this level.

The policy by regulators is to encourage and promote the benefits for banks reaching this level and progression toward the A-IRB approach is highly rewarding, though it is accepted that it may not be economically sound for some banks.[264] Therefore, it seems a thorough evaluation would be required to fully investigate as to whether the A-IRB approach should be sought for the reasons explained above.

The end result is that the A-IRB approach, and by de facto the F-IRB approach, is very different from the mindset of Basel I. Capital requirements would now be based on a bank's experiences and judgement.

Pillar 1 - Operational risk

The second component of Pillar 1 relates to operational risk. Operational risk refers to failed internal processes by people and systems, or from

[263] B E Gup, 'The New Basel Accord and Advanced IRB Approaches: Is There a Case for Capital Incentives?' in C Brown and K Davis, *The New Basel Capital Accord* (Thomson 2004) 125.
[264] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 75.

events externally that lead to losses. Whilst a new addition to Basel II, this risk was coined many years beforehand.[265]

Operational risk is defined in Basel II as, '…the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events'.[266] Arguably one of the reasons why this risk was created was due to the large wrongdoings of both Enron in 2001 and WorldCom in 2002 as concurred with by Wong[267] who stated the following, 'The Basel II reform (2004) established operational risk as a major risk, following the fall of Enron and WorldCom, two of the largest corporate bankruptcies caused by unauthorized trading and accounting scandal'.[268] Additionally, the Barings Bank collapse further highlighted to the Basel Committee that operational risk was an imperative factor that needed more attention.[269]

The case of Enron portrayed a classic example of greed by people and it illustrated that whilst an entity may be large it is still susceptible to collapse. Although not directly linked to the Basel regulations and operational risk, Enron displayed how several people within an

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[265] Michael Powers, 'The Invention of Operational Risk' http://eprints.lse.ac.uk/21368/1/DP16.pdf page 2 accessed 16 September 2015.
[266] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 144 accessed 2 April 2015.
[267] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 201.
[268] Ibid 177.
[269] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 103.

organisation can damage and implode an organisation from within. It is this part of the Enron scandal that relates to operational risk and one would assume that this was included in Basel II to stop events like this from happening.[270]

Another example was WorldCom, a similar case to Enron only larger in terms of loss. Again illustrating a clear abuse of internal management and the falsification of accounts; this finally led to WorldComs' demise.[271] It has been suggested that, '…most of the major losses of the last twenty years have been driven by operational risk losses. Enron, WorldCom…all experienced catastrophic losses because of operational risk misjudgments'.[272] Thus emphasising the significance of operational risk.

Continuing on this note and more applicable to the research due to the entity being a bank was the failure of Barings Bank; albeit primarily due to fraud.[273] It is arguable that fraud can be a main factor of operational risk and Barings Bank is one of several examples that portray this.[274] In

[270] Chris Seabury, 'Enron: The Fall of a Wall Street Darling' http://www.investopedia.com/articles/stocks/09/enron-collapse.asp accessed 19 June 2015.
[271] David Hancock, 'World-Class Scandal at WorldCom' http://www.cbsnews.com/news/world-class-scandal-at-worldcom/ accessed 19 June 2015.
[272] Global Risk Advisory, 'Global Risk Management' http://www.globalriskadvisory.co.uk/global-risk-management.html accessed 16 September 2015.
[273] Jason Rodrigues, 'Barings Collapse at 20: How Rogue Trader Nick Leeson Broke the Bank' *The Guardian* (London, 24 February 2015) http://www.theguardian.com/business/from-the-archive-blog/2015/feb/24/nick-leeson-barings-bank-1995-20-archive accessed 19 June 2015.
[274] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 7.

short, a rogue trader brought down Barings Bank[275] and the capital based regulation at the time was not enough to save Barings Bank. This was a combination of large operational losses and that Basel I was not geared toward risk management.[276]

It can be ascertained from the three aforementioned examples of internal abuse that people were the real driving force behind the catastrophes within those entities, although they were not directly linked to operational risk and more to do with accountancy laws in the first two cases. However, it is proposed that this must have heavily influenced the Basel Committee and the need to limit this kind of abuse. The major effects of Enron,[277] WorldCom[278] and Barings Bank[279] are evident. Hence the importance and inclusion of operational risk.

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[275] See Jason Rodrigues, 'Barings Collapse at 20: How Rogue Trader Nick Leeson Broke the Bank' *The Guardian* (London, 24 February 2015)https://www.theguardian.com/business/from-the-archive-blog/2015/feb/24/nick-leeson-barings-bank-1995-20-archive accessed 20 September 2018.

[276] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 104.

[277] Richard A Oppel Jr and Andrew R Sorkin, 'Enron's Collapse: The Overview; Enron Collapses as Suitor Cancels Plans for Merger' *New York Times* (New York, 29 November 2001) http://www.nytimes.com/2001/11/29/business/enron-s-collapse-the-overview-enron-collapses-as-suitor-cancels-plans-for-merger.html accessed 25 June 2015.

[278] Simon Romero and Riva D Atlas, 'Worldcom's Collapse: The Overview; Worldcom Files for Bankruptcy; Largest U.S. Case' *New York Times* (New York, 22 July 2002) http://www.nytimes.com/2002/07/22/us/worldcom-s-collapse-the-overview-worldcom-files-for-bankruptcy-largest-us-case.html accessed 25 June 2015.

[279] James Titcomb, 'Barings: The Collapse that Erased 232 years of History' *The Telegraph* (London, 23 February 2015) http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/11427501/Barings-the-collapse-that-erased-232-years-of-history.html accessed 25 June 2015.

As mentioned earlier operational risk was a new addition under Basel II. Unlike credit risk, operational risk requires no capital to cover this exposure and this is due to the fact that it is not a quantitative risk like credit risk; it is concerned with control systems and expert opinions[280] and cannot be quantified. Similar to credit risk, operational risk also contained three approaches:

- Basic Indicator Approach
- Standardised Approach
- Advanced Measurement Approach

To contemplate what this meant for a bank, these approaches will be analysed.

Pillar 1 - Operational risk and the Basic Indicator Approach

Gup describes the Basic Indicator Approach as, '…one indicator to represent the operational risk for the entire bank, and it ties capital to a single measure of business activity…'.[281] The first approach to calculating operational risk can be viewed as a simplistic way to calculate capital requirements which is based on a gross income percentage.[282] The Basel

[280] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 75.
[281] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 8.
[282] B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 106.

Committee identified that there were many risks associated with operational risk from fraud and system failures to external events. It even includes legal risk.[283] Hence the inclusion in Basel II.

The first approach gives a capital charge equal to 15 percent of a banks gross income and a bank must hold capital equivalent to the last three years (on average) of a fixed percentage in relation to positive annual income (gross).[284] It is the simplest of the three approaches and only considers the risk in proportion to a bank's activities. Under Basel II there are no requirements that need to be fulfilled to use this approach as it is the default option for operational risk. Although, due care and accordance to the guide stipulated by the Basel Committee should be practised; this may be due to a difficulty in applying a capital charge to operational risk as a result of methodology and historical data issues.[285] The guidelines have been updated in recent years.[286]

Gross income includes items such as interest receivable, interest payable and income from shares.[287] Gross income should exclude items such as any loss or profit from the sale of securities or income derived from

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[283] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 129.
[284] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 144 accessed 2 April 2015.
[285] B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 106.
[286] Bank for International Settlements, 'Principles for the Sound Management of Operational Risk' http://www.bis.org/publ/bcbs195.pdf accessed 22 April 2015.
[287] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 262.

insurance.[288] Therefore, it is apparent that gross income should be applied before the deduction of operating outgoings.

It is a simple gauge for operational risk and this is why it is the default approach. There are no requirements set by Basel II that need to be satisfied before this model can be used,[289] but Basel II does purport that operational risk and the Basic Indicator Approach should fall in line with guidance given for sound banking practices.

As will be highlighted shortly and because the Basic Indicator Approach does not offer any incentive for applying this calculation method, there are incentives for reaching the more complex approaches. However, some banks will not be able to apply the Advanced Measurement Approach due to the complexities of such.

Pillar 1 - Operational risk and the Standardised Approach

The Standardised Approach is more complex in comparison and by using this method the risk is more closely aligned to the purpose of the loan. These loans are placed into eight categories and range from corporate

[288] Ibid 263.
[289] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 263.

finance to retail brokerage.[290] It is more advanced than the Basic Indicator Approach whereby percentages are based on the business lines.

Like the Basic Indicator Approach, the average gross income over the last three years must be given. In contrast, the Standardised Approach goes further in allowing a bank to offset negative income from one area of the business to another, provided that over the last year the sum of capital requirements are positive.[291] The end sum yields the total operational risk charge for a bank. The multipliers used for calculating the total operational risk can be found in Basel II.[292] As illustrated there are eight business lines relating the level of capital needed to the gross income and these range from 12 percent retail brokerage to 18 percent corporate finance.

A bank must have clear responsibilities in what they should be doing and assign these to a risk management function.[293] What this means is that if correctly done then operational risk will be properly assessed and monitored, additionally the design and implementation of future models can be put into practice.

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[290] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 146 accessed 2 April 2015.
[291] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 74.
[292] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 147 accessed 2 April 2015.
[293] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 264.

If a bank is using this approach then regular reporting must occur and include risk exposures and material losses to management aspects of the bank, as well as the board of directors.[294] The outcome(s) of such means that mechanisms must be in place to take action if needed. What this means is that policies must be in place for non-compliance.

For banks using this model, the processes and assessment system in place for risk management not only requires validation, but also regular independent review.[295] In addition to this, the bank's risk assessment system will be reviewed regularly by external sources and it would appear that this is in order to make sure that it is compliant and functional. In comparison to the Basic Indicator Approach it can be ascertained that the second approach in place to calculate operational risk is more detailed and thorough.[296] Validation is required and so only the largest of banks will go toward this approach.

Pillar 1 - Operational risk and the Advanced Measurement Approach

Evidently the third and final approach is even more accurate than the second. There are similarities with the Standardised Approach such as regular reporting of risk exposures, internal and external reviews, and

[294] Ibid.
[295] Ibid 265.
[296] See I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 110-111 for a different stance.

validation of key processes.[297] Although, the scale and detail in which this is done will be much greater.

It was envisaged that through this model flexibility would be afforded to banks for them to use their own approaches, subject to qualitative and quantitative standards.[298] There are threshold conditions which must be met before a bank can use the Advanced Measurement Approach. To surmise these include: all operational risks are captured, all bank operations meet qualitative criteria and any simpler model approaches used meet criteria, on implementation a significant part of the banks operational risk is captured by this model, and this approach must be rolled out to all legal entities and business lines.[299] It is by its very nature, the third and final approach to calculating operational risk, the most complex and only the largest of banks will attempt to gain approval.

A bank may apply this approach (assuming approval has been granted and conditions are met above) to parts of its operational risk. The rest of the operational risk can be calculated either by the Basic Indicator Approach or the Standardised Approach.[300] Although there is no set model to follow there are some key points to adhere to whilst performing

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[297] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 265.
[298] B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 106.
[299] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 266-267.
[300] Although it is envisaged that once a bank applied this approach to part of its undertaking, it will do so for the other business lines.

this approach. For example, a bank using this model can use both internal and external data (five years plus) when assessing risks, and the bank must have procedures in place to collate operational historical data and retain this information so that it can be used by the appropriate business department.[301]

As highlighted recently, in order for a bank to use this approach certain conditions must be met. The full threshold of conditions are listed in Basel II[302] and the demanding nature is evident; in reality only larger banks will be able to satisfy this criteria.[303] If larger banks are able to utilise this model, which in turn should improve measures of operational risk, then the incentives gained (lower capital charges) are highly beneficial. What can be construed from the information discussed is that Basel II became more robust and aligned to its new measure, operational risk.[304]

Whilst there seem to be many hurdles for a bank using this model, and an assumption could be made that once approved a bank will be in a strong place to implement this approach; the worrying part is that after

[301] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 75.
[302] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 149-156 accessed 22 April 2015.
[303] Similar to Credit Risk and the A-IRB approach.
[304] Bank for International Settlements, 'Operational Risk - Supervisory Guidelines for the Advances Measurement Approaches' https://www.bis.org/publ/bcbs196.pdf page 12 accessed 15 March 2018.

approval a bank is left to their own devices.[305] Surely there still needs to be some form of assistance and guidance. Even though it is the most advanced of all three approaches, this element does raise some concern. Not only from a supporting function but also regulation and monitoring. The Basel Committee did not indicate the structure of calculations, although there are minimum requirements stipulated in respect of risks prescribed.[306] It may also be the case that it is the most advanced and therefore once approved there is no need to provide much guidance thereafter.

Pillar 1 - Market risk

The third component of Pillar 1 is market risk, which is widely known for the VaR method. This will be discussed in greater detail during Chapter 4 when looking at Basel III as this is arguably one of the major flaws of Basel III.[307]

Market risk is unchanged from its definition in Basel I, and primarily relates to risk associated with on and off balance sheet criteria as a consequence of change in market prices. It also relates to interest rate

[305] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 267.
[306] Ibid.
[307] VaR is mentioned here as Basel II was the starting point for VaR. Meaning that VaR began to be more prevalent and relied on. Equally, it could not be omitted at this point because the focus of Chapter 2 is Basel II and the three pillars. VaR falling under Pillar 1 Market Risk.

instruments and equities in a bank's trading book, as well as foreign exchange and commodities risk.[308]

It should be noted that unlike credit risk and operational risk, market risk has two approaches and the reason why the former has three approaches is because for most banks the Standardised Approach (credit risk) and Basic Indicator Approach (operational risk) are sufficient, but for some larger banks the other approaches are needed to accommodate the complexity and manner in which the bank operates. To be clear, the definition of market risk is, '…the risk of losses in on and off-balance sheet positions arising from adverse movements in market prices'.[309] The positions included come from the trading book of a bank, commodity and foreign exchange risks for the entire balance sheet of a bank, and in more recent times it now includes credit risk and illiquid positions within trading book portfolios.[310]

There are two approaches that are used to measure market risk, they are:

- Standardised Approach
- Value-at-Risk Approach (VaR)

[308] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 157 accessed 22 July 2015.
[309] European Banking Authority, 'Market risk' https://www.eba.europa.eu/regulation-and-policy/market-risk accessed 15 March 2018.
[310] Ibid.

Pillar 1 - Market risk and the Standardised Approach

Market risk did not change greatly in terms of regulatory requirements from the introduction of the Market Risk Amendment 1996 seen in the later stages of Basel I. It does, therefore, continue with a basic risk weighting approach.

The Standardised Approach applies a regimented set of criteria which is only permitted when the risk can be offset with another risk and when that risk is either linear, equal or opposite.[311] This approach relies on the risk weights being fixed along with aggregation techniques. On this basis the Standardised Approach will either disregard correlations or apply a very simple approach. If a bank requires a more sophisticated way to calculate market risk then the second method discussed shortly will need to be sought.

The Standardised Approach is used for different areas of risk from interest rates to commodities. With interest rate positions, for example, the risk is guided by the maturity or duration of a position.[312] With commodity positions, for example, the risk is determined by spot price risk, basis risk and interest rate risk which are then combined with long and short term positions and regulatory capital charges.[313]

[311] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 90-91.
[312] J Bessis, *Risk Management in Banking* (4th edn, John Wiley & Sons Ltd 2015) 190.
[313] Ibid.

Even though this approach is the basic of the two stipulated for market risk, it is fairly prohibitive in that is requires a bank to store large sums of capital for trading book activities. In theory a bank is given two options, apply this approach as long as the trading book is basic or small, or develop calculations for using VaR.[314] For many banks this could mean that the path to calculate market risk is already determined because their trading book will be large. Consequently, the only route to take in calculating market risk is the VaR method. In addition, incentives to use internal models (VaR) are prevalent and with the possibility of producing lower capital charges[315] the temptation to go down this route was very alluring.

In reality the Standardised Approach can only be used when a bank has no complex products in their portfolio, or they are not a large bank. Therefore, most banks will be guided toward the second approach to calculate market risk.

Pillar 1 - Market Risk and the Value-at-Risk Approach (VaR)

In comparison the second approach is more complicated and uses both qualitative and quantitative standards. As highlighted above a bank may have to go down this route due to the prohibitions of the Standardised

[314] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 91.
[315] B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 106.

Approach. VaR will be discussed in more detail during Chapters 4 and 5 due to the risk posed but will be briefly explained here due to the discussion of Market Risk.

The focus of this approach is to assess general risk exposure.[316] For more specific risks other internal models are used, e.g. debt securities or equities which will have a specific charge attached due to VaR not capturing the risk. This approach can be described as, 'For market risk, the VaR measures the magnitude of an adverse market shock on a position, or on a portfolio of positions, over a given horizon'.[317] Whilst it is good at deterring general risk exposure, specific risk exposure may prove tricky.

A bank must not only produce VaR on a daily basis but also conduct back testing. Back testing is the comparison of the estimations made by using VaR and to measure those to the actual profit and loss results.[318] In other terms it is, '…for checking that the number of losses in excess of VaR is, or is not, in line with the quantile of the VaR model'.[319] The way in which VaR is estimated is simply described as, '…a 99 per cent confidence level over a 10-day holding period'.[320]

[316] J Bessis, *Risk Management in Banking* (4th edn, John Wiley & Sons Ltd 2015) 190.
[317] Ibid 124.
[318] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 92.
[319] J Bessis, *Risk Management in Banking* (4th edn, John Wiley & Sons Ltd 2015) 191.
[320] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 92.

There are several criticisms of VaR which will be highlighted in the weaknesses section of this chapter, but VaR will be examined and scrutinised at greater length during Chapter 4, as the improvements made by Basel III still portray some obvious problems and it is one of the three weaknesses of Basel III that the author believes to be of huge concern.

Pillar 1 - Summary

Pillar 1 has added value to Basel II with the enhancements made to credit risk as well as the inclusion of operational risk and further enhancements made to market risk. By allowing banks to use several approaches depending on bank size and being permitted to do so, Pillar 1 improved greatly. Overall, a more robust system surfaced.[321]

In summary, credit risk was overhauled to include two new approaches (F-IRB and A-IRB), operational risk was a new addition which included three approaches (Basic Indicator Approach, Standardised Approach and Advanced Measurement Approach), and market risk was enhanced and VaR improved. It will be discussed in the strengths and weaknesses section the implications that occurred due to the amendments and enhancements made by the Basel Committee.

[321] Nout Wellink, 'Basel II is Sophisticated and Sorely Needed' *Financial Times* (London, 9 April 2008) https://www.ft.com/content/868f7c42-0637-11dd-802c-0000779fd2ac accessed 15 March 2018.

PILLAR 2 - SUPERVISORY REVIEW

The new pillar supervisory review was to stimulate banks to develop better risk management protocols. Supervisory review can be described as, '…not only to ensure that banks have adequate capital to support all the risks in their business, but also to encourage banks to develop and use better risk management techniques in monitoring and managing their risks'.[322] Arguably Pillar 2 acts as a net, catching elements of risk not caught in Pillar 1. This was a good inclusion and it is believed to be the real innovation behind Basel II.[323]

Pillar 2 was created to determine those risks that may not be captured and addressed under Pillar 1[324] and to evaluate those risks. Basel II further stipulates:

> 'Supervisors are expected to evaluate how well banks are assessing their capital needs relative to their risks and to intervene, where appropriate. This interaction is intended to foster an active dialogue between banks and supervisors such that when

[322] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 204 accessed 2 April 2015.
[323] A Resti, 'Pillar II in the New Basel Accord and in the New European Directives' in M Bignami and A Pilati, *Pillar II in the New Basel Accord: The Challenge of Economic Capital* (Risk Books 2008) 3.
[324] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 130.

deficiencies are identified, prompt and decisive action can be taken…'[325]

In addition to catching risk that may have slipped through the net in Pillar 1, the second pillar endeavoured to create better communication links between banks and supervisors. That way if an issue is identified it can be swiftly rectified.[326]

It can be succinctly summed up as, 'Evaluate all your risks, cover them with capital, and we will check what you have done'.[327] It is a tool to make sure that banks are not only putting capital aside to cover their risk but that it is also being completed in the correct way; a policing mechanism essentially. It is plausible to assume that this was an important part of Basel II regardless of its small inclusion in the Basel document.[328] Yet it did, and continues to be, an integral part of the Basel regulations. It is not wrong to conclude that for such an important mechanism, and it is, after all one of three pillars, that more emphasis and explanation would have been allocated to supervisory review.

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[325] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 204 accessed 2 April 2015.
[326] Also see G Walker, R Purves and M Blair, 'Banks and Banking' in G Walker, *Financial Services Law* (4th edn, Oxford University Press 2018) 714.
[327] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 89.
[328] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 108.

Furthermore, Pillar 2 requires internal systems to be put in place by banks to evaluate capital requirements in relation to the regulatory framework, and this will enable the bank to monitor their own risk profile. Banks should also consider other areas that may affect their risk such as reputation risk or interest rate risk;[329] i.e. banking book. It can already be ascertained from the material so far that the baton was given to banks and supervisors in the effective implementation of Pillar 2. This delegation was not, in hindsight the optimal move to take from the Basel Committee.[330]

Although Pillar 2 was covered briefly in comparison to Pillar 1 and Pillar 3 of Basel II, it was still of paramount importance in that it required a bank to evaluate all other risks that were not covered under Pillar 1 and to then set aside capital to counter the risk of those areas. An extremely tough task without doubt.

The idea behind Pillar 2 is valid but the execution flawed. The Basel Committee's lack of exactness was deliberate, so all risks not identified under Pillar 1 would be found in Pillar 2.[331] Whilst the ambiguity of such questions the effectiveness of Pillar 2, the flexibility of having no

[329] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 89.
[330] The collapse of Icelandic bank, Kaupthing, is a prime example. Whilst this was clear evidence to suggest that transparency and strong supervision was lacking, it also suggested that if more emphasis and leadership was given by the Basel Committee, then Pillar 2 may have been more effective.
[331] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 89.

regimented list is undoubtedly beneficial in that it should allow banks to assess all risks and not just those stated on a list; a tick box exercise. Unfortunately, a repercussion of this flexibility poses the query of whether those banks and persons conducting such evaluations, are suitably qualified. This will be discussed in the weaknesses section because if they cannot, then the intended purpose of Pillar 2 becomes impeded.

It has been described that the innovation of Pillar 2 is that it extended the range of risks in terms of capital adequacy.[332] With this in mind, there are three points contained in Basel II that establish what Pillar 2 will tackle: identify risk that is not fully captured by Pillar 1, identify risk not captured at all under Pillar 1, and identify risk that are external to banks such as business cycle effects.[333] With this in mind, supervisors must ensure that for banks using the Internal Ratings Based Approach and/or Advanced Measurement Approach should satisfy their required qualitative and quantitative measures.[334] To reinforce these aims and cement the key ethos of Pillar 2, there are four principles[335] to enable Pillar 2 to be effective.

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[332] A Resti, 'Pillar II in the New Basel Accord and in the New European Directives' in M Bignami and A Pilati, *Pillar II in the New Basel Accord: The Challenge of Economic Capital* (Risk Books 2008) 3.
[333] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 204 accessed 22 April 2015.
[334] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 90.
[335] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 108.

Firstly, banks should be able to assess their overall capital adequacy with the processes they use.[336] This means that a bank should consistently demonstrate capital targets in relation to their risk profile. Additionally, a bank should have a plan in place in terms of how they will sustain their capital levels.[337] Some of the items that will be considered is whether there are clear policies and procedures in place and that regular independent reviews occur. This is a positive mechanism which enhances good practices that in theory should promote and strengthen financial stability.

Secondly, supervisors should review the bank in relation to ability to assess capital adequacy and strategies.[338] However, it is imperative that a bank does not become permissive as supervisors are in place to evaluate and not to take the role of a banks internal risk management system. Although, it should be acknowledged that supervisors are required to take action if they are not happy with a bank and the processes involved.[339] Areas to be covered include internal targets and processes and whether these have fully incorporated the risks associated to the bank and the assessment of capital quality composition. Similar to

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[336] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 205 accessed 2 April 2015.
[337] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 308.
[338] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 209 accessed 2 April 2015.
[339] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 308.

the first point, this should enhance financial stability and promotes good banking practices.

Thirdly, supervisors expect that all banks operate above the minimum capital ratios set[340] and also hold capital over the required minimum.[341] This is due to Pillar 1 not being able to cover all risks. The reason for the expectation that banks should hold more than the minimum capital requirement (8 percent) is attributed to the notion that this provides better protection for banks and future unexpected changes such as business cycle. The author would comment that the more a bank has in terms of capital, the better chance of surviving a financial crisis. However, it will be examined in Chapters 4 and 5 that capital is not the only mechanism that should be relied on.

Fourthly, supervisors should intervene at the earliest opportunity to prevent a bank from falling below the minimum levels required.[342] Under the fourth principle the magnitude of actions available to regulators is sizeable and increases the monitoring of a bank; this is a positive attribute as it allows a regulator to use discretion and apply tools best suited to each individual bank.[343] Regulators will also ensure that

[340] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 211 accessed 2 April 2015.
[341] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 309.
[342] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 212 accessed 2 April 2015.
[343] Ibid.

operational risk and interest rate risk is correctly managed, amongst other particulars.

There are many actions that regulators can impose on a bank if it is deemed to be non-compliant with Pillar 2. This could be a capital adequacy restoration plan or a restriction to pay dividends is put in place until Pillar 2 is better applied. There is an assertion that the latitude given to regulators is a weakness of Basel II and that it fails to create a level playing field because some regulators will be stricter than others. This will be discussed later in this chapter and whether (from a European perspective) the eleven principles created by the Committee of European Banking Supervisors to combat this criticism actually worked.[344]

It is tenable that all four principles together create a strong shield against adverse financial conditions and if implemented correctly then this will increase the chances of bank survival. Matten explains, '…Pillar 2, if done properly, acts as a very powerful tool to mitigate the impact of financial crises and provide greater resilience to the system'.[345] Matten also raises an interesting point in that countries such as Australia and Canada, both of which were unscathed by the financial crisis, applied and incorporated Pillar 2 into their respective financial eco-systems.[346] Matten highlights

[344] European Banking Authority, 'The Application of the Supervisory Review Process under Pillar 2 (CP03)' https://www.eba.europa.eu/cebs-archive/publications/consultations/2004/cp03 accessed 11 April 2015.
[345] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 222.
[346] Ibid.

not only why Pillar 2 was introduced, but also the effectiveness of what could be achieved if endorsed and applied.

Pillar 2 – Summary

Supervisory review was a great improvement and one which demanded a huge amount of time and work from banks. Essentially, banks are required to evaluate their risks, make sure adequate capital is put to one side for those risks, and then the regulator will check to see what has been done to prevent such risks. As Matten alluded to, in theory Pillar 2 is thorough and complimentary towards Pillar 1,[347] therefore, if applied appropriately and correctly then this should strengthen a bank and limit problems when they arise.

One of the main positives of Pillar 2 is evident from an earlier point mentioned with countries such as Australia and Canada being unscathed from the financial crisis. This is a true testament to the positive capabilities of Pillar 2 and adoption of Basel II in general.[348] After all, the purpose of Pillar 2 is to complement Pillar 1 and account for any risks not found or fully captured in the first pillar, including external risk. However, what has been created is a non-level playing field. This part of Pillar 2 will be discussed in the weaknesses section shortly. As Balthazar explains,

[347] Bank for International Settlements, 'Pillar 2 (Supervisory Review Process)' https://www.bis.org/publ/bcbsca08.pdf page 2 accessed 15 March 2018.
[348] Jamie Smyth, 'Australian Banks Urged to Boost Capital Holdings' *Financial Times* (Sydney, 7 December 2014) http://www.ft.com/cms/s/0/44012108-7dbf-11e4-bb0a-00144feabdc0.html#axzz3ckS6r92J accessed 11 June 2015.

most banks have adhered to the minimum 8 percent capital requirements but this is purely to do with better credit ratings amongst other items (it could be due to domestic banking regulations, rather than a better credit ratings), therefore, capital put aside is not being allocated appropriately.[349] This contradicts Matten's earlier statement in that it has been shown by the likes of Australia and Canada that if done properly then the rewards are evident. There appear to be positive elements in both approaches. Matten makes the point that if implemented correctly and fully, Pillar 2 can be a useful tool for financial stability. Equally, and as Balthazar comments, a non-level playing field may be created due to the varying degree in which Pillar 2 is being implemented. Therefore, both standpoints are valid. For equality purposes, implementation should have been the same across the board.

The true nature of Pillar 2 will be exposed when discussed later in this chapter, specifically when considering the weaknesses of Pillar 2.

PILLAR 3 - MARKET DISCIPLINE

Market discipline is the third and final pillar which established a disclosure system for regulated banks.[350] It can be described as the responsibility of a bank (or sovereign nation) to be mindful of the risks that may affect

[349] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 94.
[350] See B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 117-118 for further discussion.

stakeholders, although the approach in Basel II is limited to a description. Pillar 3 has been described as, '…a set of requirements regarding appropriate disclosures that will allow market participants to assess key information on the scope of application, capital, risk exposures, and risk assessment processes, and so the capital adequacy of the institution'.[351] The idea and basis of Pillar 3 is that those involved with a bank, be it a client, investor, or other party will be in a better position to assess the risk of a bank and whether they should remain, invest, or leave etc.

Based on the material discussed above, banks are required to make their own reports relating to internal risk management systems and once complete this must be publicly disclosed. This must be completed at least two times per year,[352] normally bi-annually. Therefore, it is imperative that banks are timely and accurate when publishing such reports.[353] It will be pointed out later in this chapter that there are some weaknesses that arise from this requirement, such as the material of information and how the information is distributed.

The Basel Committee created Pillar 3 to compliment both Pillar 1 and 2 and aimed to encourage banks to publish such information. For further clarity, it has been described by the Basel Committee as,

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[351] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 95.
[352] Ibid 46.
[353] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 71.

'…a set of disclosure requirements which will allow market participants to assess key pieces of information on the scope of application, capital, risk exposures, risk assessment processes, and hence the capital adequacy of the institution'[354]

This is very similar to Balthazar's view.

Pillar 3 relies on market participants and a commitment from the bank to publish a risk report on a frequent basis. These participants i.e. investors or debt holders, will then be able to act if the bank is struggling. This in effect should encourage banks to manage themselves more efficiently and sensibly. If successful, a bank should be well equipped to withstand financial crises as banks should be creating an environment in which they are more efficient and sensible because this would create transparency.[355]

Market discipline includes both insiders, those of whom are responsible for examining a bank who generally have access to a vast amount of information, and outsiders such as CRAs to equity investors. To gain clarity two examples can be given, one from an insider perspective and one from an outsider perspective.

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[354] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version http://www.bis.org/publ/bcbs128.pdf page 226 accessed 2 April 2015.

[355] The disclosures will be based on mandatory information stipulated by Basel II such as capital structure, capital adequacy and credit risk, to supplementary disclosures such as management's discussion and or analysis. Ibid Part 4.

An insider, for example a bank regulator, will assess the qualities within the bank. A major factor of this role is to detect problems so that changes can be made. Gup explains, 'Part of the examination process is the early detection of problem banks and banks that are going to fail'.[356] An outsider, for example CRAs, will assess the bank from an external perspective based on the information that is provided to them amongst other items. However, CRAs are not completely independent because agencies are paid by the bank to rate the bank. There are several problems associated with this measure and one questions the effectiveness of CRAs and their ability to establish risks within a bank before it is too late.[357] This will be discussed in the weaknesses section as it can be argued that CRAs have their own agenda, so much so that the use of CRAs in recent times is a hot topic for discussion.[358]

A final note to highlight is that similar to Pillar 2, Pillar 3 would appear to be an integral part of Basel II, yet there was only a small amount dedicated to this area in relation to the entire document.[359] Whilst the amount of pages do not reflect the quality of material, it does put forward a degree of less importance and in some ways the author would argue a half-hearted approach. Surely such an integral part of Basel II like Pillar

[356] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 74.
[357] Ibid 78.
[358] Sam Fleming, 'Banks Face Restrictions on use of Rating Agencies in Risk Assessment' *Financial Times* (London, 22 December 2014) https://www.ft.com/content/02f2506a-89fe-11e4-8daa-00144feabdc0 accessed 15 March 2018.
[359] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 109.

3, it would be appropriate to allocate more time and effort in order for this piece of regulation to stand a better chance of success. Pillar 3 can be viewed as a list of information requirements,[360] and perhaps in reality this justifies a smaller part within the Basel II regulations. However, the author would propose that more could have been done at this stage to allow a stronger chance of being successful. It has been a challenge for those compiling the information required and those who use it.

Pillar 3 – Summary

Pillar 3 was crucial to Basel II because it allowed market participants to effectively assess the true risk of a bank. On this basis, the client, investor or other participant can make an informed decision as to whether they wish to remain with that bank or invest.[361] In theory, this is plausible because it encourages banks to maintain high standards.

Pillar 3 states that disclosures should be objective and details policy related on risk management for each risk, this includes items such as strategies, processes, and processes for monitoring.[362] What Pillar 3 does or in theory should do, is support market participants in assessing key

[360] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 132.
[361] It has been inferred by the Basel Committee that participants such as investors and capital markets, including depositors, will provide benefits when it comes to timely disclosures. Thus, contributing to financial stability.
[362] Hazem Hassan, 'Basel II - Disclosures Requirements' https://www.kpmg.com/EG/en/IssuesAndInsights/Documents/Issues-Insights%20PDFs/Basel%20II%20letter%206%20%20pllar%203%20Disclosure%20v3.pdf page 1 accessed 29 July 2015.

information. The information gained will be highly important material from risk exposures to capital adequacy.

There is a degree of significance in deciding which disclosure(s) are most applicable and purposeful. A bank should be aware that what constitutes material is the material that if omitted or exaggerated, could influence the participant whose reliance on this material would affect their decision.[363] Thus reinforcing the idea of transparency and providing a better foundation for assessing a bank's profile.

In essence Pillar 3 requires a bank to be transparent with the information it provides and this must be to the utmost accuracy and submitted in a timely manner.[364] It seems that whilst the information must be accurate, the byproduct is that it can also be burdensome and is a balancing act between the two.

One of the main challenges for Pillar 3 is the information gathered by a bank. For example, the material to be included is decided by the bank producing the disclosure (guidelines are used for this).[365] However, Gup suggests that the disguising of information may prove a problem.[366] The

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[363] Ibid.

[364] Jose A Lopez, 'Disclosure as a Supervisory Tool: Pillar 3 of Basel II' http://www.frbsf.org/economic-research/publications/economic-letter/2003/august/disclosure-as-a-supervisory-tool-pillar-3-of-basel-ii/ accessed 29 July 2015.

[365] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version' https://www.bis.org/publ/bcbs128.pdf page 227 accessed 19 March 2018.

[366] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 84.

consequence of such disguising is that the picture presented can be misleading to both participants, markets, and regulators. The financial profile being illustrated may be very different to the actual finances of the bank concerned.

In conclusion, the nature of Pillar 3 promotes and encourages banks to partake in market discipline and contributes to a more stable banking system whilst improving the effectiveness of solid banking practices. Before discussing the strengths and weaknesses of Basel II it is important to discuss the revisions that were made shortly after the onset of the financial crisis, otherwise known as Basel II.5.

BASEL II.5

Before the financial crisis, it was acknowledged that improvements were needed to bolster Basel II.[367] Many banks during the financial crisis experienced extreme financial loss and several banks collapsed.[368] This is because the trading book of those banks were extensively damaged and several factors contributed to this such as the subprime mortgage

[367] F Cannata and M Quagliariello, 'A New Framework for the Trading Book' in F Cabana, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 105-111.
[368] Nick Mathiason, 'Three Weeks that Changed the World' *The Guardian* (London, 28 December 2008) http://www.theguardian.com/business/2008/dec/28/markets-credit-crunch-banking-2008 accessed 8 May 2015.

market,[369] collateralised debt obligations[370] (CDOs), and what can only be described as a lack of common sense. Basel II.5[371] imposed higher capital charges in relation to market risk for banks trading book activities, especially credit and credit related products. There was a realisation that Basel II did not possess the qualities to deal efficiently with a global financial crisis, as will be explained shortly, the criticism of Basel II can be extended to Basel II.5, a point concurred with by Moosa.[372]

The process of improving the market risk framework commenced before the financial crisis, but evidently increased in speed and complexity once markets began to crash.[373] There were four key enhancements made:

- Stressed VaR
- Incremental Capital/Risk Charge
- A new standardised charge for both securitisation and re-securitisation

[369] See R W Kolb, 'The Origins of the Financial Crisis' in M N Baily, R E Litan and M S Johnson, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 80-81.
[370] Collateralised Debt Obligations began as structured asset-backed securities which have morphed into the mortgage sphere. In essence, it is a structured asset-backed security.
[371] Bank for International Settlements, 'Revisions to the Basel II market Risk Framework' http://www.bis.org/publ/bcbs158.pdf accessed 8 May 2015.
[372] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 121.
[373] Standard and Poor's, 'Basel 2.5 Increases the Squeeze on Investment Banking Returns' http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245334380388 accessed 2 May 2015.

- A Comprehensive Risk Measure, which looks at trading position and the assessment of default and migration risk[374]

With this mind an analysis of the financial crisis points to several problems, in particular VaR which falls under Pillar 1 minimum capital requirements. The main two enhancements from the four listed included Stressed VaR and Incremental Capital/Risk Charge,[375] and both of these were adopted in response to the criticisms of VaR. This issue would develop further in Basel III and remains a problematic mechanism for gauging risk[376] because over reliance on such models underestimates risk.

All four enhancements will now be discussed, bearing in mind that Basel II.5 was supposed to improve the market risk framework. However, the complexity of these improvements were difficult to interpret. This will be analysed later when considering the strengths and weaknesses of Basel II.

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[374] Ibid.
[375] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 137-138.
[376] Clifford Rossi, 'Banks Model Risk Worse than Ever, Thanks to Basel III' https://www.americanbanker.com/opinion/banks-model-risk-worse-than-ever-thanks-to-basel-nbsp-iii accessed 15 March 2018.

Basel II.5 and Stressed VaR

Stressed VaR[377] (SVaR) was one of the key changes incorporated into Basel II.5 and was aimed at decreasing the impact that pro-cyclicality could have on a bank, although not all pro-cyclicality is bad.[378] The previous model under Basel II was that a bank would calculate VaR based on a 99 percent one day model. This could be scaled up to ten days if needed using a one year fixed period of high level stress.

New capital charges were introduced which meant that those banks using internal models would now have to include a SVaR calculation based on a one year stress period. The purpose of such is that in the previous model only normal market conditions were engaged, whereas SVaR in addition to this would combat periods of stress outside of normal market conditions. In essence, SVaR is a static model which does not rely on market movements, like past VaR in Basel II. It may vary with positional changes and, therefore, SVaR can be interpreted as more of a stress test result for a bank.

Basel II.5 stipulated that when using SVaR the estimate must be conducted on a weekly basis and should be conducted by using the formula of historical data, which includes high stress levels for a banks'

[377] A version of VaR but to account for highly stressed scenarios.
[378] Bank for International Settlements, 'Procyclicality - What it Means and What can be Done' http://www.bis.org/review/r090805d.pdf accessed 13 August 2015.

portfolio. In turn, regulators will expect capital to be held for these new stressed periods. Essentially it is the same as VaR but used under extreme volatile market conditions.[379]

The underlying idea behind SVaR was that it would be a first line of defence mechanism which would protect a bank against pro-cyclicality.[380] As the Financial Stability Board (FSB)[381] state, the consequences of pro-cyclicality can result in many forms such as market volatility to illiquidity.[382] In theory this is good, in reality and has been mentioned earlier, not all pro-cyclicality is bad. Nevertheless, it would appear a step in the right direction and an improvement on VaR.

Basel II.5 and Incremental Capital/Risk Charge

As a result of the many banks that became submerged during the financial crisis due to loss of liquidity, credit migration and credit spreads as opposed to default,[383] the addition of Incremental Capital/Risk

[379] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 111.
[380] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 209.
[381] A body that monitors and makes recommendations in regards to the global financial system.
[382] Financial Stability Board, 'Reducing Procyclicality Arising from the Bank Capital Framework' http://www.fsb.org/wp-content/uploads/r_0904f.pdf?page_moved=1 accessed 15 March 2018.
[383] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 108.

Charge[384] (IRC) enabled banks to estimate default as well as migration risk(s) over the course of a one year period for un-securitised credit products. This takes into account both sets of positions and individual positions.

Several large banks experienced substantial losses during the financial crisis and these losses were narrowed to a bank's trading book.[385] These were not covered in the aforementioned SVaR model because the losses had come from credit movements and not defaults as well as sheer loss of liquidity.[386]

In essence, IRC was incorporated in recognition that illiquid credit products were not accounted for under VaR, or at least not to a high standard.[387] This can be associated with the developments that took place in a bank's portfolio which eventually led to changes in credit risk and illiquid positions.[388] Therefore, VaR was somewhat lacking. It should be appreciated that there was no particular model recommended for the use of IRC but rather a set of guidelines that should be observed and

[384] An estimate of default including migration risk in relation to credit products that are unsecuritised in a bank's trading book.
[385] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 206-207.
[386] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 108.
[387] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 206-207.
[388] European Banking Authority, 'Market Risk' https://www.eba.europa.eu/regulation-and-policy/market-risk accessed 21 September 2018.

implemented.[389] Whilst this can be viewed as being well structured and specific, the author would state that these guidelines do exude a task of strenuous dedication and one which may be too much for most banks. As Wong commented at the time, 'IRC is a turning point that may open up an exciting but arduous path of development'.[390]

All positions are accounted for under IRC and are subject to capital charges in regard to interest rate risk, with a few minor exceptions. The new charge under Basel II.5 should capture rebalancing positions, in this context it refers to end of liquidity horizons. In turn, this will mean that a constant level will be maintained over a one year period for a bank.

IRC will also include the impact of clusters of default as well as migration events, specifically throughout stressed periods of time in the market place. This means that the variation between these two events (including others) will not be assessed and the end result is that the IRC is added to VaR for market risk. Taking into account this new charge, it meant that those banks using an internal based model should have set procedures in place to competently and carefully conduct required stress tests.[391] These should include all types of scenarios and as a result may impact on a bank with extreme financial losses.

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[389] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 207.
[390] Ibid.
[391] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 138.

Securitisation positions are excluded and covered under a separate heading of the securitisation framework which now follows.[392]

Basel II.5 and new standardised charges for securitisation positions

For those positions that are not in a correlation trading book which are covered by the Comprehensive Risk Measure approach (discussed next) and are linked to securitisation and re-securitisation products, then a standard charge will be applied.

Securitisation now receives the equivalent to a banking book charge[393] and resecuritisation carries with it higher risk weights due to its nature. A resecuritisation is, '…a securitization where the risk associated with an underlying pool of exposures and at least one of the underlying exposures is a securitisation position'.[394]

Securitised products in a bank's trading book will be subject to capital charges of the banking book unless it is a resecuritisation which receives a much higher charge.[395] Now, as a consequence of Basel II.5, it will be

[392] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 109-110.
[393] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 138.
[394] Financial Conduct Authority, 'Resecuritisation' https://www.handbook.fca.org.uk/handbook/glossary/G2256.html accessed 17 January 2019.
[395] Standard and Poor's, 'Basel 2.5 Increases the Squeeze on Investment Banking Returns'

calculated according to more stringent rules which will be either banking book rules or those quoted by the Basel Committee.[396] That being said, these have been described as rather punitive rules and charges applied will be in accordance to the banking book and IRB approaches.

Basel II.5 and Comprehensive Risk Measure

The final key enhancement is in respect of correlation trading positions. The Comprehensive Risk Measure[397] (CRM) approach covers default and migration risks for underlying exposures and allows a bank to combine the measurement of both specific and incremental risk.[398] In a nutshell it is an estimate of risk in relation to a bank's credit correlation position within their trading book.

The model to use CRM is both difficult and challenging, and a bank must ensure that when using the CRM model that the information gathered adheres to the list. Some of those requirements include recovery rate volatility as well as volatility of correlations.[399]

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http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245334380388 accessed 2 May 2015.

[396] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 112.

[397] It assesses default and migrations risks. An estimate of the risk to do with a bank's trading portfolio.

[398] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 113.

[399] Ibid 113-114.

CRM also includes basis risk which is best described as a situation whereby, '…the risk that a hedge becomes less effective—and the potential costs of resetting a hedge following a change in the underlying position, such as an amendment to the composition of an index'.[400] The floor of at least 8 percent is deemed necessary of the capital charge to the specific risk and is, in most cases, binding on a bank.

A bank will also be required to create and implement stress scenarios that examine the repercussions of those hypothetical scenarios in relation to recovery rates and default rates.[401] These tests ought to be carried out on a weekly basis with those results submitted to the relevant regulator who will apply capital charges if necessity dictates. This improves financial stability by having regular tests carried out on a weekly basis.

Basel II.5 - Summary

Basel II.5 became the sole focus of the Basel Committee once the financial crisis unravelled and certainly prompted the Basel Committee to take action.[402] On reflection it was only a temporary measure considering that Basel III was published in 2010. As Moosa states, '…Basel II.5 came

[400] Standard and Poor's, 'Basel 2.5 Increases the Squeeze on Investment Banking Returns' http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245334380388 accessed 2 May 2015.
[401] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 114.
[402] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 110.

as a quick and *ad hoc* response to the global financial crisis'.[403] This was not good and in reality a quick fix to a much larger problem.

Before Basel II.5 the trading book of a bank would be primarily based on a VaR approach, however, with the enhancements made by Basel II.5 this changed to also include the four key enhancements previously stated. Perhaps the Basel Committee should have waited until 2010 when Basel III was published and set implementation dates sooner for the matters of concern, whilst allowing for later adoption with some of the other stipulations that were introduced by Basel III. After all, it can now be viewed as a quick response.

Due to the nature in which Basel II.5 came to being, there are very noticeable weaknesses as a result. The main problem is complexity, this has been commented on by many reputable authors[404] and it is on the verge of making Basel II.5 incomprehensible. It was overlapping, inconsistent and a fast attempt at resolving a big issue with rules that baffle most.[405] Unfortunately, Basel II.5 was a quick attempt at fixing a large problem when it came to repairing the risk management and securitisation issues beforehand, to changing risk models and regulatory

[403] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 124.
[404] Ibid 125 quoting The Economist.
[405] In the author's opinion, there was no need to bring about Basel II.5. Efforts should have been geared toward Basel III instead.

capture.[406] This was no easy task and one which should have been given a lot more time.

STRENGTHS AND WEAKNESSES OF BASEL II AND II.5

Perhaps it is fitting to start with a quote from Davis who stated that:

> 'Clearly Basel II is an attempt by regulators to not only close "loopholes" originating from product and technological innovation since the implementation of Basel I, but also a strategy for managing loopholes that cannot yet be anticipated due to future shifts in economic and technological conditions'[407]

It has been described how Basel II tried to improve upon its predecessor by implementing a range of enhancements in order to improve financial stability, even more so with Basel II.5. In the light of this, and before assessing the weaknesses of Basel II, some of the key strengths will be considered.

[406] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 124-128.
[407] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 123.

Strengths

Firstly, there are many advocates for Basel II who state that it was very attentive and detailed and that many countries would be able to implement Basel II over a long period of time which would protect the foundation created by Basel I and promote the improvements made by Basel II.[408] Furthermore, Basel II was adopted by most signatory countries between 2007-8[409] which should be viewed as a positive step in the right direction.

The second iteration would also extensively encourage banks to act more prudently, an area which Basel I struggled to achieve. The detailed nature of Basel II was defended very strongly by Jaime Caruana, who at the time of Basel II being published was the Governor of Bank of Spain and also the Chairman of the Basel Committee.[410] He expressed that complexity was a by-product and was inevitable whilst creating a three pillared framework that offered many options to assist banking regulation.[411] A valid point, although considering the position held then any feelings of negativity would not have been projected in order to allay any fears and give a positive outlook. In a separate interview, Jaime Caruana also highlighted the benefits of Basel II and the requirement for banks to be

[408] Ibid.
[409] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 136.
[410] It should be noted that William McDonough orchestrated the core work undertaken for Basel II.
[411] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 123 quoting Jaime Caruana.

well capitalised and more risk sensitive;[412] one of the aims that Basel II wanted to achieve and thus further complimenting.

Secondly, Basel II made Pillar 1 minimum capital requirements more robust with the improvements made to credit risk and the creation of operational risk. Credit risk under Basel I contained the Standardised Approach for measuring risk. This simplistic mechanism drew wide criticism and was subsequently changed to include the F-IRB and A-IRB models; both encouraged banks to manage risk more effectively and accurately. The latter of the two gave greater power and responsibility to a bank and if implemented correctly it meant that prudent banks could manage their finances and risk more effectively. In essence, banks could differentiate between loans and could also create their own risk models as long as approval was given by the regulator.[413] Operational risk was a new measure created under Basel II which allowed for a new type of risk to be calculated and accounted for. This new measure was to combat failed internal processes as a result from people and systems, or external events which could affect a bank. Like credit risk, there were three approaches (Basic Indicator Approach, Standardised Approach and Advanced Measurement Approach). An extra form of security that further added to the mechanisms put in place to prevent a bank's financial collapse and to promote more scrutiny and vigilance.

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[412] Bank for International Settlements, 'Jaime Caruana: Chairman of the Basel Committee Discusses Basel II' http://www.bis.org/review/r030915a.pdf page 1 accessed 20 May 2015.

[413] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 134-135.

Thirdly, Pillar 2 and supervisory review. Arguably a huge breakthrough that required banks to account for risk not fully captured in Pillar 1 or not captured at all, including the observation of external events. Pillar 2 was a significant improvement from Basel I which allowed, or more importantly encouraged and required, a bank to identify any risks that had not been recorded in Pillar 1. In some countries Pillar 2 was clear and detailed, and added RWA or capital requirements to this,[414] which in the author's opinion was the right move to implement.

As the title suggests, supervisors play a pivotal role and assess whether a bank is operating above the minimum capital guidelines, and it should also detect problems that may arise in the future. As stated earlier in this chapter, Matten explained that Pillar 2 is a very powerful tool if implemented correctly.[415] The main purpose of Pillar 2 it seems is one of prevention rather than reaction. Foreseeing a risk will help reduce or stop that risk from impacting on a bank, if not implemented or incorrectly implemented a bank will be more likely to encounter financial repercussions. This can be argued from the examples given earlier in this chapter with Australia and Canada being positive instances of deploying Pillar 2. Surely Pillar 2 is one of the outstanding strengths devised and whilst it is a demanding requirement, it is a logical one that makes sense. In a document of over three hundred pages, simplicity was refreshing.

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[414] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 130.
[415] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 222.

Fourthly, is Pillar 3 market discipline. Pillar 3 was greatly developed under Basel II and promoted a bank to be more conscious of image and reliability toward clients and potential clients. Pillar 3 enables clients and potential clients to assess the riskiness of a bank and allows an informed decision to be made i.e. whether to invest or not. It also compliments Pillar 1 and Pillar 2. Linking to the ethos of all pillars depending on each other.

Pillar 3 also allows for market transparency[416] and as such it ensures that the price that banks pay in order to raise capital truly reflect the current market; importantly the level of risk.

There are some negatives of Pillar 3 such as there being no requirement to publish disclosure forms when it comes to financial accounts and that it can be made in any way that is available.[417] However, in theory market discipline is a good measure. Perhaps the positive to take from this is that it was recognised by the Basel Committee[418] and that it would be a stepping stone for future amendments.

Finally, Basel II.5 should be noted for one of its key strengths and these were the enhancements made to the market risk framework. Due to the financial crisis it was apparent that Basel II was not fit for purpose in

[416] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 350.
[417] Ibid.
[418] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 132.

many ways, one of them being market risk. Basel II.5 developed four key enhancements (SVaR, IRC, standardised charges for securitisation and re-securitisation, and CRM) to make Basel II stronger and less prone to financial instability.[419] The main strength that came from this was that Pillar 1 became more robust to include higher capital requirements, equally the improvements made to VaR was very much needed with the main enhancement being SVaR, which unlike VaR in Basel I, considers stressed scenarios outside of normal market conditions. Thus, SVaR was able to adapt to the ever changing market. A quality Basel I did not have.

Whilst there are noticeable strengths of Basel II and ones which clearly portray the developments brought forward by the Basel Committee, there are obvious flaws. After all, if Basel II was sufficiently robust to withstand the financial crisis then there would not have been Basel II.5, or this version may have been published several years later and Basel III may have been published years later too. It has already been established that Basel II.5 was a quick response to a much larger problem.

It is now appropriate to analyse some of the main weaknesses that came from Basel II and what this actually meant for the second iteration. Similar to strengths, the points that follow are non-exhaustive and are

[419] Saul Perez, 'Why Basel II.5 Corrected Basel II to Improve Banking Regulations' http://marketrealist.com/2014/09/basel-ii-5-corrected-basel-ii-improve-banking-regulations/ part 9 accessed 6 August 2015.

purely some of the main criticisms[420] that the author of the research proposes to be most at fault.

Weaknesses

Firstly, is the issue of complexity.[421] This point was also mentioned as a strength, but it is comprehendible to be viewed as a weakness and that with Basel II it is difficult to understand and interpret compared with Basel I. The importance to note from this weakness is that not only will banks become confused by Basel II, but that it lacks any real substance.[422] This is due to the nature of Basel II being procedurally complex and in scope of what it is trying to achieve, too overreaching. Furthermore, it is too complex and really should be taken back to basics.[423] It should deploy effective liquidity and leverage ratios. Due to these complexities, the costs of implementing are also detrimental[424] and has limited the amount of countries that have adopted Basel II. This is evident even now with Basel III in full motion.[425] It was inevitable that

[420] See R W Kolb, 'Basel II Put on Trial' in F Cannata and M Quagliariello, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 369-374 for other criticisms.
[421] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 137-138.
[422] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 122.
[423] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 119.
[424] Ben S Bernanke, 'Basel II: Its Promise and its Challenges' http://www.federalreserve.gov/newsevents/speech/bernanke20060518a.htm The Need for Ongoing Dialogue and Flexibility accessed 11 June 2015.
[425] Brooke Masters, 'Countries Fail to Enforce Basel Reforms' *Financial Times* (London, 18 October 2011) http://www.ft.com/cms/s/0/50f40604-f984-11e0-bf8f-00144feab49a.html#axzz3cl4p67AF accessed 11 June 2015.

when creating Basel II a high level of complexity would result. To incorporate new measures that were not included in Basel I as well as enhancing and improving existing measures, is no simple task that allows simplicity. The consequence of this is that Basel II became long and convoluted, and this is visible when considering the number of pages between the two Basel iterations. When taking into account Basel I was thirty pages compared to Basel II at over three hundred pages, it is easy to deduce that there would be a sharp increase in complexity and scale. More is not always better and when it is argued that, 'the whole system should be swept away',[426] serious consideration needs to be given to the complexity of the Basel regulations.

Secondly, criticisms can be drawn from the extreme tightening of Pillar 1 minimum capital requirements and that in actual fact the strict mechanisms in place will affect business cycles for those banks. Meaning that credit within a bank will become strangled during times of recession and in periods of prosperity credit will be loosened.[427] The weakness is most apparent having recently experienced a financial crisis in which Basel II was in place but did not stop such an event. The criticism of Pillar 1 being tightened which impacted on the business cycles for many banks has been proven in that many economies around the world were in sheer jubilation during the financial and housing market boom, yet it was not

[426] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 119 quoting J Kay.
[427] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 122.

foreseen that danger loomed just around the corner even though, for example, mortgages of up to 125 percent loan to value[428] were being offered. It is because of this loosening that created many downfalls for banks around the world. Equally, it should be appreciated that some loosening of credit should be permitted, which in turn will boost economies. In the author's opinion there needs to be a clear separation between boosting economies in the form of housing and business lending, and then plain recklessness of lending for the sake of lending and greed.[429] There is no implied suggestion here in that it should be reversed i.e. loosened in times of recession and tightened in times of prosperity, far from it, what this weakness means and what is being suggested is that there should be a balance between the two.[430] Instead of being driven to make more money, perhaps a department could be created within a bank to internally monitor and set an allocated maximum amount of funds per year. Then credibility and sensibility can be achieved; a barrier from excessiveness. Once the level of lending has been reached then a bank would have to wait until the next financial year, or if there are still several months of the year remaining then the department could review the situation. It should be noted that there are (already) risk management and compliance departments within banks, which the Basel

[428] BBC, 'Mortgages of 100% 'Were Foolish'' http://news.bbc.co.uk/1/hi/uk/7904621.stm accessed 28 May 2015.
[429] Sam Fleming and Benedict Brogan, 'Greed Fuelled the Crash: How City Fat Cats Took Home £17bn Bonuses… as Their Banks Crumbled' *Daily Mail* (London, 14 October 2008) http://www.dailymail.co.uk/news/article-1077120/Greed-fuelled-crash-How-city-fat-cats-took-home-17bn-bonuses--banks-crumbled.html accessed 19 March 2018.
[430] This is something for economists to debate and the author does not pertain to be such, but rather a general observation on what seems to be a ridiculous and risky stance.

Committee refer to and comment on what they should be doing.[431] However, the effectiveness of these departments should be assessed as to whether they are doing a sound job.

Thirdly, and continuing with Pillar 1 is the calculation of credit risk and CRAs.[432] With so much reliance and credibility proportioned to CRAs it was inevitable that this would cause a problem for Basel II, and the Basel Committee did not allow for the fact that there were, and continue to be, a small minority of CRAs that have international reputation to offer such assistance.[433] A key example showing the inadequacy of this problem was that prior to and during the financial crisis, many banks were involved with products known as asset backed securities. These were financial products created so that several loans could be packaged together and then sold to another bank,[434] otherwise known as collateralised debt obligations (CDOs). There were two main negatives from continuing with an over reliance of CRAs reports. One, that banks could effectively move risk and decrease their RWA. Two, CRAs being unable to calculate such risks due to the complexity and regular movement of those risks.[435]

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[431] Bank for International Settlements, 'Compliance and the Compliance Function in Banks' https://www.bis.org/publ/bcbs113.pdf accessed 15 March 2018.
[432] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 115-116.
[433] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 441.
[434] CDOs started to take shape circa 2000 where banks created different ways to securitise subprime mortgages i.e. collateralised debt obligations. By doing so, it made it difficult for CRAs to rate and recognise risk.
[435] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 8.

Needless to say, the ability to move risk away from a bank (this could be in the form of a special purpose entity)[436] cannot only bypass Basel II but can also give the impression of a better credit risk rating. The consequence is that an untrue and false picture was created and whilst many will not see beyond this mask of deception, eventually those risks will come to surface. As Baily et al. note, '…a CDO could turn lead into gold…'.[437] This caused a massive problem for CRAs and contributed to the weakness of CRAs calculating credit risk under Pillar 1.

Fourthly, and continuing with CRAs were the bad estimations taking place prior to and during the financial crash of several banks. The main problem with CRAs and their relationship with Basel II is that all CRAs are businesses at heart. All businesses have a clear desire and need to make money. One of the biggest ways to make money is to compete and secure the services of a bank so that an assessment and rating can be given, in return money will be paid to CRAs.[438] It is this unhealthy relationship that assisted to the demise of Basel II and contributed to the mismanagement of banks.[439] This was envisaged just as Basel II was about to be implemented and before the financial crisis, Alexander et al. note:

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[436] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 18.
[437] R W Kolb, 'The Origins of the Financial Crisis' in M N Baily, R E Litan and M S Johnson, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 80-81.
[438] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 18.
[439] Patrick Kingsley, 'How Credit Rating Agencies Rule the World' *The Guardian* (London, 15 February 2012) https://www.theguardian.com/business/2012/feb/15/credit-ratings-agencies-moodys accessed 9 November 2017.

'…the use of outside agencies raises a serious problem, namely the need to provide these agencies with appropriate incentives to consider the full implications of their ratings on over systemic risk…there exists the possibility that these private agents may act either in their own interests or in that of the borrower in hopes of maximising their own gains by issuing favourable ratings'[440]

The author of the research is of the opinion that there is a three stage vicious cycle and this begins with Basel II and the importance placed on CRAs, followed by banks who feel impelled to obtain high ratings from CRAs, followed by the necessity to make money as a business for CRAs. As Lowry and Reisberg comment, '…the built-in conflict of interest created by the business model, whereby the agencies compete for the business of, and are compensated by, the issuers of such securities, creates undesirable incentives for the CRA's to bend to their clients' wishes'.[441] An example of such can be viewed in the United States[442] and it happens elsewhere too.[443] It can be argued that leading up to the financial crisis credit ratings were becoming more of a number crunching exercise and may not have been effectively wrong, but that clients were not applying

[440] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 232.
[441] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 448.
[442] The Economist, 'Measuring the Measurers' https://www.economist.com/node/9267952 accessed 15 March 2018.
[443] Patrick Kingsley, 'How Credit Rating Agencies Rule the World' *The Guardian* (London, 15 February 2012) https://www.theguardian.com/business/2012/feb/15/credit-ratings-agencies-moodys accessed 15 March 2018.

common sense to assets. CRAs will be explored in more detail during Chapter 4 as it is one of the pivotal areas that portrays clear pitfalls.

Fifthly, and continuing with Pillar 1 is market risk and VaR. VaR is not an easy segment of Basel II and is described as complex.[444] It did not become clear until the financial crisis how bad the VaR methodology was in calculating market risk. This was due to fault and basic assumption that VaR predicted a constant liquidity level of ten days. Due to this, many banks did not have sufficient liquidity and were not able to reduce this problem within a ten day period.[445] The VaR model was further weakened because it looked at historical data and assessed how the market had performed during the past five years. The problem with this is obvious, the five years leading to the financial crisis portrayed a positive and strong outlook, economies were booming and banks were lending at an unprecedented rate with mortgage approvals rising by the year.[446] It appears that many people in banking (and those who were not) became disillusioned and trapped with the mindset that the prosperity would never end. VaR looked at volatility within various markets and because there were none at the time, no problems were forecast; unless those people within the banking world were hiding the true nature of banking practices, however this is a separate issue entirely. When problems did

[444] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 208.
[445] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 95.
[446] Steve Denning, 'Lest we Forget: Why we had a Financial Crisis' http://www.forbes.com/sites/stevedenning/2011/11/22/5086/ accessed 13 August 2015.

start to arise, the model used by many banks could not predict the amount of liquidity needed to withstand such volatility.[447] It will be explained in Chapters 4 and 5 that liquidity is an important factor and one that needs more emphasis.

Sixthly, relates to Pillar 2 supervisory review which contains two serious issues, latitude given to regulators and the potential un-level playing field that it exhibits. The latitude given to regulators has been argued to be very detrimental for the effectiveness of Basel II and due to the informed nature of Pillar 2 regulators would benefit from this greatly.[448] What this means is that because of the informed supervision within a bank, this would enable the supervisor to evaluate the internal risks of that organisation. It could be said that supervisors were not performing these tasks correctly. More importantly, the latitude given to regulators meant that in some countries regulators would be very strict compared to other countries where a more relaxed approach was taken. This could be due to benefits that a regulator could reap from informed supervision.[449] This leads to the next issue within Pillar 2; an un-level playing field.[450] It has been argued that many smaller banks would be at a disadvantage under Basel II compared with larger banks, and that the latitude given to regulators will also impact on how banks operate depending on their size.

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[447] VaR will be analysed to greater length during Chapter 4 and has briefly been discussed here due to it arising and gaining a prominent role in Basel II.
[448] B E Gup, 'The New Basel Capital Accord and Questions for Research' in M Saidenberg and T Schuermann, *The New Basel Capital Accord* (Thomson 2004) 116.
[449] Ibid.
[450] B Davis, *Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008) 127-129.

The problem here is that many smaller banks will be disadvantaged by the rules of Pillar 2. Unlike their larger rivals, smaller banks will not have the financial resources to implement costly measures recommended by their respective regulator, compared to a larger bank if that regulator is strict. Also, even larger banks can be disadvantaged by Pillar 2 against other large banks in another country. This is due to how the regulator operates and how strict or lenient they are, and this is a common fear amongst many.[451] As a consequence, a un-level playing field is created. Alexander et al. add that those banks based in countries with strong supervision will also be disadvantaged,[452] further aggravating the situation. As discussed earlier in this chapter, the Committee of European Banking Supervisors tried to circumvent this problem by introducing eleven principles (in a European context).[453] In theory the eleven principles compliment Pillar 2 and promote supervisory review for internationally active banks. However, even though these principles had been published several years beforehand, there still seems to be an unclear process in which banks co-operate on the same basis. As highlighted by Sommer and Spielberg, 'More discussions between regulators and banks are required to establish a level playing field…'.[454]

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[451] L Balthazar, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006) 92.
[452] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 234.
[453] European Banking Authority, 'The Application of the Supervisory Review Process Under Pillar 2 (CP03)' https://www.eba.europa.eu/cebs-archive/publications/consultations/2004/cp03 accessed 29 July 2015.
[454] Daniel Sommer and Holger Spielberg, 'ICAAP in Europe Moving in Different Directions' https://www.kpmg.com/SG/en/IssuesAndInsights/ArticlesPublications/Documents/ICAAPinEurope.pdf page 5 accessed 29 July 2015.

Clearly, to limit the level playing field conundrum Pillar 2 should have also applied to non banking institutions not just large international banks.

Seventhly, Pillar 3 market discipline and the material to be gathered and distributed by a bank, and the challenges that are faced.[455] The real problem here is the true effectiveness to assess an organisation. It has been previously mentioned that under Pillar 3 there are insiders and outsiders. The resounding problem is assessing an organisation effectively[456] and honestly. Some examples include withholding and concealing of information. Another issue is complicity between employees.[457] These two examples were heavily evident in the case of Enron (whilst not a bank it was linked with large investment banks such as Citigroup[458] and Merrill Lynch[459]), therefore criticism can be directed towards Pillar 3 and market discipline on the basis that whilst market discipline is good in theory, in practice it can be disguised. Concealment in relation to market discipline has been commented on for many years now.[460] To surmise, these issues can have very harmful side effects.

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[455] Christophe Cadiou and Monika Mars, 'Basel II Pillar 3: Challenges for Banks' https://www.pwc.com/gx/en/banking-capital-markets/pdf/Basel.pdf accessed 25 June 2015.
[456] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 116-117.
[457] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 84.
[458] See Eric Dash, 'Citigroup Resolves Claims That it Helped Enron Deceive Investors' *New York Times* (New York, 27 March 2008) https://www.nytimes.com/2008/03/27/business/27enron.html for background information.
[459] See A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 196-200 for background information.
[460] Fiona C Maclachlan, 'Market Discipline in Bank Regulation Panacea or Paradox?' *The Independent* (London, Fall 2001) http://www.independent.org/pdf/tir/tir_06_2_maclachlan.pdf page 230 accessed 15 March 2018.

Market discipline is an integral part of Basel II and one which is, as Wandhofer asserts it is, '…fundamental to an efficient and thriving banking industry'.[461]

Eighthly, Basel II.5 is problematic due to the lack of coherent and consistent regulations. Basel II.5 contains overlapping features of capital charges which lead to illogical reasoning and at times repetitiveness. The problem with the overlapping issues is that capital charges for a bank can be higher than the actual greatest loss,[462] meaning for some trades the capital required may exceed the positions value. In addition, it appears that due to the financial crisis the Basel Committee were very keen to limit the occurrence of such a disaster happening again and to the same magnitude - which is understandable. Arguably one way to prevent or limit this was to make sure that banks allocate vast amounts of money to limit any financial losses in the future. By doing so would mean that no matter how big the financial crisis, a bank would be able to withstand it. However, due to this overcautious approach, many banks will have to (by the very nature of Basel II.5) put aside extraordinary amounts of money that far exceed the potential maximum losses. Whilst this could be perceived positively, the biggest weakness is that a bank may be less likely to lend money, complete as many financial transactions as they would have before this measure came into force or reduce the areas in

[461] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 109.
[462] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 140-141.

which the bank operates. This would not only be detrimental to the bank, but also the economy that it resides in; a domino effect from bank to economy to around the world.

Before concluding, it is worth considering one more issue: should the definition of capital have been re-evaluated and changed under Basel II? Capital should be straightforward in its definition and approach, the general consensus is that regulatory capital requirements should be sufficient capital for both expected and unexpected losses. As Gleeson states:

> '…any losses actually suffered would affect only the contributors of the capital of the institution; leaving depositors, bondholders and other senior creditors paid in full. This would ensure the smooth operation of the market, remove most of the credit risk exposure inherent in dealing with banks, and ensure that the function of operating the payment system would proceed unaffected by credit losses by individual institutions'[463]

The then FSA stipulated and combined two parts of what capital meant and stated:

[463] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 45.

'…first, the role of capital while a firm is solvent, including in times of stress, and second, the role of capital if a firm is wound up. We can summarise this distinction between the two main purposes of capital as follows: to absorb losses while the firm is going concern…to absorb losses in a gone concern scenario…'[464]

The definition of capital stated by Gleeson and the combination of two functions which it entails as per the statement by the then FSA, best describe what capital is. With the aforesaid in mind, the definition of capital described in the Basel regulations did not change a great deal from Basel I[465] and still incorporated the three tiers. The key weakness from this was that Basel II continued with the same problem that hindered Basel I and that capital was only interpreted from a solvency point of view. The decision to not change the definition of capital has been undermined extensively since the financial crisis, although it should be noted that the definition was changed to incorporate this in Basel III and this will be discussed in Chapter 3.

Whilst the definition of capital remained the same and Basel II was fairly effective at protecting a bank against its liabilities and in turn the banks' depositors from an insolvency level, it did not account for the order in

[464] Financial Services Authority, 'Definition of Capital' http://www.fsa.gov.uk/pubs/discussion/dp07_06.pdf page 16 accessed 2 July 2015.
[465] Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards A Revised Framework Comprehensive Version' http://www.bis.org/publ/bcbs128.pdf page 12-18 accessed 2 July 2015.

which a financial crisis affects banks. The order in which this sequence starts is from current year's profits right through to any other debt.[466] The next problem that occurs is that a bank will have severe difficulties before it reaches the end of the aforementioned sequence. In essence, a bank may still be solvent at the point of its Tier 1 core capital being mostly depleted, and at this stage questions will be asked, and authorities may need to intervene. This is otherwise known as a tipping point, or in accountancy terms regulatory insolvency. It has been recognised by the Basel Committee that whilst there is no term used for tipping point under the Basel regulations, it is agreed that capital can be sliced into two parts, going concern and gone concern, resembling the definition from the then FSA. The former relates to a bank's ability to absorb losses whilst still trading, the latter relates to the protection of depositors when a bank has been judged to have failed and that no way back is envisaged.[467]

The financial crisis highlighted the gaping flaw in capital and how it was implemented under Basel II. Whilst it can be viewed that secondary capital would help protect senior creditors in a gone concern situation, it did not have any real effect in helping a bank stay solvent. As Gleeson states, '…capital is useless to a firm if any loss impacting on that capital item immediately results in failure of the firm'.[468] The point being made

[466] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 63.
[467] Ibid 63-64.
[468] S Gleeson, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010) 45.

is that capital should be capable of not only protecting creditors but should also support a bank without any consequences that would lead it to cease trading or require more capital from investors.[469] In short, the problem with capital and that Basel II continued to use an almost identical model to that of Basel I (which should have been changed in the author's opinion), is that it only focused on solvency and the protection of ordinary creditors. This is admirable, but there is no point in protecting ordinary creditors if it means that the bank will collapse. It would be better for a bank to stay solvent, operational and contribute to the economy in which it functions. With this in mind, the solution can be split into two options, either change the definition of capital or introduce new mechanisms. The problems that developed from the financial crisis illuminated these flaws. This substantiates that the definition of capital should have been re-evaluated (like it has been in Basel III)[470] when the Basel Committee were constructing Basel II, as it did not fully reflect or assist when a bank approaches financial instability.

Furthermore, the Basel Committee stated that the Basel regulations should, '…keep pace with the rapid evolution in the marketplace…',[471] however this cannot happen if the minimum amount a bank should hold against risk has not increased from Basel I to Basel II. Gup explains that

[469] Although it should be appreciated that capital has always endeavoured to achieve both.
[470] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' https://www.bis.org/publ/bcbs189_dec2010.pdf page 12-29 accessed 21 October 2015.
[471] B E Gup, *The New Basel Capital Accord* (Thomson 2004) 11 quoting the Basel Committee.

the minimum capital requirement of 8 percent is not adequate. The point being made is that if the definition of capital was re-evaluated and had changed, like the author suggested when the Basel Committee were devising Basel II, then maybe the 8 percent figure would have risen too. Thus, more capital was required by banks.

It has been illustrated throughout the Strengths and Weaknesses section that Basel II (including II.5) contained positive and negative attributes. What can be deduced is that Basel II was an improvement from Basel I, but it still maintained some previous issues as well as creating new issues. A conclusion will now follow to bring together what has been detailed throughout Chapter 2 in order for some perspicuity.

CONCLUSION

The New Basel Capital Accord, Basel II, was published in 2004 with a revised and full comprehensive guide issued in 2006. Unlike its predecessor Basel II was more thorough and detailed. A three pillared approach was created which focused on making banking regulation more stable, creating a level playing field and promoted stringent practices which banks around the world should incorporate. The three Pillars were:

- Pillar 1 - Minimum capital requirements
- Pillar 2 - Supervisory review
- Pillar 3 - Market discipline

There was a key shift between Basel I and II from an inflexible to flexible model. Basel II expanded on the different types and varying degrees of risk, it also enhanced existing, and created new, measures to combat these issues. However, Basel II was not able to shake off parts of its predecessors' shackles that evidently led to its demise in 2010 when Basel III was published.

Perhaps what Basel II will be remembered for is its inability to limit the financial crisis. Many commentators from academic to professional backgrounds will remember Basel II in this light with comments such as, 'The Basel II regulations proved to be wholly inadequate in preventing the failure of banks and no mechanism was in place for a bank deemed too large to fail'.[472] This is because at the time of the financial crisis and years leading to it, Basel II was the leading document on banking regulation and most banks had complied with it by 2008.[473] Yet it could not stop or did very little to suppress the financial crisis that engulfed many countries and economies around the world.

In reality, if Basel I was the leading document during the financial crisis it would also have done very little it seems, although Basel I was created in a different era in which many factors were dissimilar. On this point, perhaps what the Basel regulations need, whether it be an amended

[472] Hamish McCombie, 'The 2014: Living in the Shadow of Regulation? White Paper the Crash' http://www.morganmckinley.co.uk/article/2014-living-shadow-regulation-white-paper-crash accessed 29 July 2015.
[473] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 118.

version of Basel or even in the future and Basel IV, is for it to be more versatile and be able to manage many aspects of financial complication. Alternatively, it should be amended/reviewed/changed every x amount of years to keep it aligned with the fast paced world which the Basel regulations try to regulate.

It is accepted that amendments are made throughout the lifespan of a given Basel iteration, for example the Market Risk Amendment 1996 which improved Basel I; although, that was a reactive measure by the Basel Committee rather than proactive. Perhaps what should be considered is thinking outside the box, when the Basel Committee meet and discuss their agenda it would be beneficial to foresee or even predict what may be needed over the next few years. This idea may seem farfetched and could be open to criticism, but most of the leading figures involved with the Basel Committee and esteemed colleagues, are highly regarded individuals in their respective fields, whether it be finance, regulation or banking. Therefore, it would not be out of their remit.

Basel II.5 had a short time span of about one year before Basel III was published and one questions why this was done considering that Basel III was published shortly thereafter. There was a clear need for improvement and the financial crisis showed the frailties of Basel II. Ideally it would have been more sensible to incorporate this into Basel III a year later and then a smoother transition could have taken place.

To surmise, Basel II failed to prevent the financial crisis and this can be attributed to several factors.[474] Some of those factors were discussed in the weaknesses section ranging from a reliance on CRAs and bad estimations of credit risk, to market discipline and the material gathered and distributed by banks. Additionally, Basel II encouraged the accumulation of CDOs and sovereign debt, was focused on capital adequacy, permitted banks to overstate capital and understate risk, and incentivised off balance sheet utilization which enabled banks to move credit risk.[475]

While there are faults, what Basel II has done is reveal that there is still much more work to do in establishing solid banking regulations, rules and practices to govern banks around the world. Some of the lessons to take from the financial crisis was that market discipline was ineffective, an underestimation of systemic importance in relation to non-banking institutions occurred, and regulators and supervisors failed when accounting for systemic risk(s) between regulated and unregulated entities.[476]

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[474] For a detailed response, not Basel specific, see Financial Crisis Inquiry Commission, 'The Financial Crisis Inquiry Report' https://cybercemetery.unt.edu/archive/fcic/20110310173545/http://c0182732.cdn1.cloudfiles.rackspacecloud.com/fcic_final_report_full.pdf accessed 4 April 2019.

[475] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 117-119.

[476] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 311.

In the next chapter the research will move to Basel III and how it developed from Basel II, with an aim to progress, strengthen and instill a greater sense of community, solidarity and parity between countries and banks around the world.

CHAPTER 3 - BASEL III

In Chapter 2 it was demonstrated how and what led to the Basel Committee publishing Basel II and the processes that took place in order for this to happen. What is evident from the timeline between Basel I and II is that the second iteration became more complex, detailed and lengthy, these characteristics were also some of the factors which did not bode well for Basel II. A structure and overview were discussed so that a full picture of how the second iteration was intended to operate could be ascertained, as well as the strengths and weaknesses that naturally surfaced.

Chapter 3 will aim to follow a very similar pattern that was utilised in Chapter 1 whilst discussing Basel I and Chapter 2 Basel II. This pattern will show how and why Basel III was created, the structure, strengths and weaknesses, and a conclusion to bring it altogether. It should be noted that capital ratios, CRAs and VaR will not be mentioned at this stage due to these three areas being scrutinised at greater length in Chapter 4. This is purely to do with the fact that the author believes these three areas to be the most problematic for Basel III and vital in supporting the research title. It would be prudent to state that the three risks stated above and the risks which will be evidenced in the weakness subsection later in this chapter, do not fully cover other issues present such as market risk and counterparty risk, or over the counter transactions and concentration of systemic risk, both of which are

shortcomings of Basel III.[477] These issues have not been included for similar reasons to Basel I and II in that only a select few were highlighted. Additionally, these are more mathematically involved and the research never intended to take this approach.[478]

With this in mind, Chapter 3 will now begin by looking at the origins of Basel III and how and why it was created.

BASEL III

It would be poignant to start with the following quote, 'Regulatory reform must in particular address the socially unacceptable mechanism that lets banks privatize their profits when the sky is blue and socialize their risks when the hurricane is unstoppable'.[479] However, the support shown during the financial crisis endorsed the biggest moral hazard and obduracy of such.[480]

It will be appreciated over the coming chapter that Basel I and II contained elements to extend a micro prudential approach to banking

[477] Private meeting, Professor Andrew Haynes and Dr Lezelle Jacobs, 3 October 2018 University of Wolverhampton, Wolverhampton.
[478] Furthermore, this would be more in line with a mathematical/economics based research project, of which this is not.
[479] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 16.
[480] Ibid.

regulation.[481] On reflection, leverage was not restrained and levels of liquidity were low, this was particularly noticeable in Basel II and one of the main contributing factors of the financial crisis. In terms of liquidity this does seem rather strange in the author's opinion, considering that liquidity was recommended as a measure to focus on during the beginning of Basel II's tenure.[482]

Despite the flaws that will be evident in Basel III through the remainder of the research, it should be said that the Basel Committee have come a long way since Basel I. Openness and transparency have improved greatly.[483] As Sabalot rightly states, 'Basel III is part of the Committee's continuing efforts to enhance the banking regulatory framework…'.[484]

In late 2009 the Basel Committee issued two consultative documents, one on liquidity risk measurements, standards and monitoring,[485] and the other on strengthening the resilience of the banking sector.[486] This would

[481] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 44.
[482] K Alexander, R Dhumale and J Eatwell, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006) 268-269.
[483] M S Barr and G P Miller, 'Global Administrative Law: The View from Basel' (2006) 17(1) EJIL 15, 24.
[484] G Walker, R Purves and M Blair, 'International Agreements and Supranational Bodies' in D Sabalot, *Financial Services Law* (4th edn, Oxford University Press 2018) 188.
[485] Bank for International Settlements, 'International Framework for Liquidity Risk Measurement, Standards and Monitoring' http://www.bis.org/publ/bcbs165.pdf accessed 13 October 2015.
[486] Bank for international Settlements, 'Strengthening the Resilience of the Banking Sector' http://www.bis.org/publ/bcbs164.pdf accessed 21 October 2015.

be the starting point for Basel III which was published the following year and replicated the first[487] and second[488] aforementioned documents.

Similar to Basel I and II, the third iteration aimed to improve and strengthen financial stability for banks around the world[489] and in the author's view this objective will always remain pertinent. Furthermore, the G20 wanted to minimise regulatory arbitrage and improve transparency.[490] Due to this complex task, the implementation date has changed several times since Basel III was first proposed and is currently set at 2019.[491]

On contemplation there are several key events that took place leading to the undoing of Basel II and enactment of Basel III. It will be evident shortly that capital standards were far too weak and could not withstand the many forms of risk that assembled during the rise and peak of the financial crisis. There was a combination of events that contributed to this, from market liquidity risk being improperly managed to regulators

[487] Bank for International Settlements, 'Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring' http://www.bis.org/publ/bcbs188.pdf accessed 13 October 2015.
[488] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf accessed 21 October 2015.
[489] R Barfield, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 9.
[490] C Oldani, 'Global Financial Regulatory Reforms and Sovereign's Exemption' (2018) 26(2) JFRC 190, 190.
[491] Bank for International Settlements, 'Basel III Phase-in Arrangements' http://www.bis.org/bcbs/basel3/basel3_phase_in_arrangements.pdf accessed 13 October 2015.

ignoring the spread of systemic risk concentrations.[492] In addition, there was an excessive amount of leverage created for both on and off balance sheet assets.[493] In order to illustrate the pattern of events that unfolded during this time an analogy will be provided of a jigsaw puzzle that will explain several errors that once pieced together, form a picture of the financial crisis.

The first part of the puzzle relates to the years leading up to the financial crisis which saw an excessive amount of liquidity surging into the asset markets. Becker describes this as, '…money supply that is surplus to the needs of real economic activity, and therefore free to be invested in financial assets'.[494] It is because of this that many banks found it increasingly difficult to recognise liquidity risk when it occurred.[495]

The second part of the puzzle was that as the financial crisis began to take shape, liquidity started to erode due to the evaporation of wholesale funding.[496] This meant that many banks had little reserve stock to protect

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[492] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 82.
[493] K Kellermann and C Schlag, 'Occupying Risk Weighting: How the Minimum Leverage Ratio Dominated Capital Requirements - A Swiss Example' (2013) 21(4) JFR & C 353, 353.
[494] Ian Campbell, 'Excess Liquidity Thesis Gains Tractions as Financial Markets Soar' *The Telegraph* (London, 6 August 2009) https://www.telegraph.co.uk/finance/breakingviewscom/5982796/Excess-liquidity-thesis-gains-traction-as-financial-markets-soar.html quoting Sebastian Becker accessed 17 January 2019.
[495] R Barfield, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 9.
[496] Ibid.

themselves adequately from pre-existing obligations.[497] Rixtel and Gasperini comment that this deterioration which occurred rapidly particularly affected high leveraged banks and as such caused problems across the world due to interconnectedness.[498]

The third part of the puzzle is one which combined the inability of a bank to recognise liquidity risk alongside poor quality capital,[499] the repercussions of such were clear to be seen. In hindsight this is easy to state now but at the time would have been unclear to most. Whether knowingly or unknowingly by banks and regulators is a different issue entirely. Acharya and Mora suggest that due to banks being unable to recognise liquidity risk, investors began to lose confidence in the ability of banks to identify even low risk, leading many to withdraw from deposit accounts.[500]

With these two elements in play i.e. an inability to recognise liquidity risk and poor quality capital, and that during this economic time there was low inflation resulting in low capital returns, the fourth part of the puzzle refers to how banks took to riskier means, this could be in the form of

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[497] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 11.
[498] Bank for International Settlements, 'Financial Crises and Bank Funding: Recent Experience in the Euro Area' https://www.bis.org/publ/work406.pdf page 4 accessed 19 April 2018.
[499] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 83-84.
[500] Viral V Acharya and Nada Mora, 'A Crisis of Banks as Liquidity Providers' http://pages.stern.nyu.edu/~sternfin/vacharya/public_html/pdfs/WP_AM_070913.pdf page 8 accessed 19 April 2018.

irresponsible mortgage lending in the United States[501] for example, this as well as other instances aided better returns as markets shrank.[502] A result of such was that riskier financial products were being sought so that higher returns could be achieved. The problem that faced banks at this point was that there was no way back to safer ground because of the risky financial products tactic being deployed and low levels of liquidity. Popper postulates that these risky amalgams of mortgages and loans contributed to what went wrong during the financial crisis[503] (and banks are busily reviving these investments since 2013, which is a worrying factor).

It was getting to a stage where nothing else could be done to hide or rectify the reckless behaviour shown by banks, buyers vanished and prices and valuations dropped significantly.[504] This being the fifth part of the puzzle. Fox comments that during the summer of 2007 buyers and sellers could not simply agree on price, thus affecting and contributing to the financial crisis.[505] It was around this time in August 2007 that the beginning of the financial crisis began with the key indicator coming from

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[501] The Economist, 'The Origins of the Financial Crisis Crash Course' https://www.economist.com/news/schoolsbrief/21584534-effects-financial-crisis-are-still-being-felt-five-years-article accessed 19 April 2018.
[502] R Barfield, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 10.
[503] Nathaniel Popper, 'Wall St. Redux: Arcane Names Hiding Big Risk' *New York Times* (New York, 18 April 2013) https://www.nytimes.com/2013/04/19/business/banks-revive-risky-loans-and-mortgages.html accessed 19 April 2018.
[504] R Barfield, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 10.
[505] Justin Fox, 'What we've Learned from the Financial Crisis' https://hbr.org/2013/11/what-weve-learned-from-the-financial-crisis accessed 19 April 2018.

an announcement by BNP Paribas in which certain valuations were going to be frozen.[506]

The penultimate part of the financial crisis jigsaw was that Basel II did not sufficiently protect banks that incorporated the Basel regulations. Meaning that risk concentrations were underestimated and, through no fault of Basel II, the financial system was deeply intertwined.[507] The consequence of such is that financial shock could be felt far and wide, and Basel II did not have the mechanisms in place for banks to implement measures that would absorb the magnitude of losses that resulted. For example, the Royal Bank of Scotland, Citigroup and Wells Fargo had a combined total of $160 billion in losses during 2008.[508]

The final part of the jigsaw puzzle was the nature of Basel II and its pro-cyclical tendencies when calculating credit risk. This meant that the chances of a bank defaulting would be extremely heightened, the only way for a bank to circumvent this issue would be to increase capital reserves to counter losses as well as absorb potential losses. This was not achieved by many banks during the financial crisis with several United Kingdom banks amongst other international banks,[509] having to ask their

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[506] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 17.
[507] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 84.
[508] The Economist, 'World's Biggest Bank Losses' http://www.economist.com/node/13919511 accessed 18 November 2015.
[509] See J Goddard, P Molyneux and J O S Wilson, 'The Financial Crisis in Europe: Evolution, Policy Responses and Lessons for the Future' (2009) 17(4) JFRC 362, 363-370.

respective central bank or government for liquidity support.[510] There are still many banks who are reliant on state support and the tax payer has predominantly funded those banks. In the United Kingdom for instance, this is most prevalent with Royal Bank of Scotland and Lloyds Bank.[511] Only recently has Lloyds Bank group returned from partial government ownership (2017),[512] Royal Bank of Scotland group remains partly government owned.

What can be divulged from the jigsaw puzzle analogy is that a series of events took place which led to the demise of Basel II and the reverberations that rippled through the financial world were felt far and wide. It was not caused by one single factor but rather a catalogue of issues that mounted over time. In response, the Basel Committee created Basel III to strengthen not only the resilience of banks but to combat issues such as excess leverage and low quality capital.[513] To surmise, the events unfolded as follows:

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[510] Leonid Bershidsky, 'Where the U.K.'s Bank Bailout Went Wrong' http://www.bloombergview.com/articles/2015-08-04/where-the-u-k-s-bank-bailout-went-wrong accessed 13 October 2015.
[511] UK Financial Investments Ltd, 'Market Investments' http://www.ukfi.co.uk/about-us/market-investments/ accessed 30 October 2015.
[512] Ben Martin, 'Lloyds Returns to Full Private Ownership After Government Sells Down Remaining Shares' *The Telegraph* (London, 17 May 2017) http://www.telegraph.co.uk/business/2017/05/16/lloyds-passes-historic-milestone-returns-full-private-ownership/ accessed 21 September 2017.
[513] A Abdullah and I Khadaroo, 'Addressing the Financial Crisis: Perceived Effectiveness of Basel III' (2014) 29(3) JIBLR 135, 135.

1. Excess liquidity coming into the asset market made it invisible for banks and supervisors to recognise liquidity risk and this produced many problems ranging from asset price inflation to financial bubbles as Campbell states.[514]
2. Financial markets began to crash and banks had little by way of capital reserves to combat loss. It has been stated that banks were betting on themselves with borrowed money and whilst this worked in good times it did not in bad times, thus producing catastrophic events.[515]
3. A bank's inability to recognise liquidity risk combined with poor quality of capital. A view of which was supported to be adequate at the time as Buehler et al. state.[516]
4. Banks began to conduct riskier financial deals and products to gain better returns. Ashby states that many banks found it difficult to stay out of these risky activities.[517]
5. The number of buyers in the market reduces in the early parts of 2007, prices drop and no going back for banks.[518]

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[514] Ian Campbell, 'Excess Liquidity Thesis Gains Tractions as Financial Markets Soar' *The Telegraph* (London, 6 August 2009) https://www.telegraph.co.uk/finance/breakingviewscom/5982796/Excess-liquidity-thesis-gains-traction-as-financial-markets-soar.html accessed 19 April 2018.
[515] The Economist, 'The Origins of the Financial Crisis Crash Course' https://www.economist.com/news/schoolsbrief/21584534-effects-financial-crisis-are-still-being-felt-five-years-article accessed 19 April 2018.
[516] Kevin Buehler, Hamid Samandari and Christopher Mazingo, 'Capital Ratios and Financial Distress: Lessons from the Crisis' https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/risk/working%20papers/15_capital_ratios_and_financial_distress.ashx page 2 accessed 19 April 2018.
[517] Simon Ashby, 'The 2007-09 Financial Crisis: Learning the Risk Management Lessons' https://www.nottingham.ac.uk/business/businesscentres/crbfs/documents/researchreports/paper65.pdf accessed page 4 19 April 2018.
[518] See R W Kolb, 'The Financial Crisis: How Did We Get Here and Where Do We Go Next?' in J R Barth, T Li, L Wenling and G H Yago, *Lessons from the Financial Crisis:*

6. Basel II was unable to protect banks with poor and underestimated mechanisms in place.[519]
7. Basel II's pro-cyclical nature[520] when calculating credit risk meaning a higher probability of a bank defaulting and higher capital reserves were needed, that many banks did not have.

In addition to the material and sequence of events detailed, there have been a number of reports and responses to the financial crisis that link to the reasons explained above as well as highlighting other issues that contributed to the financial crisis. Particularly, the Financial Crisis Inquiry Commission[521] which issued a succinct press release[522] detailing the reasons behind the financial crisis[523] as well as a substantial report[524] intensively exploring the causes behind the financial crisis.[525]

Causes, Consequences, and Our Economic Future (John Wiley & Sons, Inc 2010) 98 for other problems that began to spread during this time.

[519] See J de Larosiere, 'Structural Bank Reforms: An Illusory Solution' (2015) 10 JIBFL 636, 637.

[520] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 44.

[521] Created to examine the underlying issues of the financial crisis that affected the United States.

[522] Financial Crisis Inquiry Commission, 'The Crisis was Avoidable – A Result of Human Actions, Inactions and Misjudgements; Warning Signs Were Ignored' https://cybercemetery.unt.edu/archive/fcic/20110310171107/http://c0186234.cdn1.cloudfiles.rackspacecloud.com/2011-0127-fcic-releases-report.pdf accessed 10 April 2019.

[523] Causes such as: failures in financial regulation, too much risk taking, systemic breaches in accountability.

[524] Financial Crisis Inquiry Commission, 'The Financial Crisis Inquiry Report' https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf accessed 10 April 2019.

[525] The report is well structured detailing not only the foundational elements leading to the financial crisis (Part II and Part III) but also, and importantly, the financial crisis between early 2007 to late 2008 (Part IV). While there are no recommendations set, the report itself is thorough and provides a key index for those wishing to examine the causes of the financial crisis. The Commission conclude that the financial crisis was avoidable, there were failures of financial regulation, failures of corporate governance, excessive borrowing

The Basel Committee also reported with initiatives in response to the financial crisis[526] summarising recommendations for going forward[527] and a comprehensive report[528] detailing further the response to the financial crisis.[529] Furthermore, the Basel Committee released a paper detailing the Basel Committee's response[530] which considered reform measures and future work.[531] Evidently, there has been commentary on lessons learned from the financial crisis.[532]

In light of the sequence of events that unraveled and the reports and papers published, the Basel Committee devised and created Basel III to strengthen the banking sector and promoted three aims, '…improve the

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and risk taking, systemic failure of accountability and ethics, mortgage lending standards dropped, and there was a failure of CRAs. Ibid *xvii* to *xxviii*.

[526] Bank for International Settlements, 'Initiatives in Response to the Crisis by the Basel Committee' https://www.bis.org/press/p090330.htm accessed 10 April 2019.

[527] Such as more and higher quality capital, higher liquidity buffers, and greater transparency.

[528] Bank for International Settlements, 'Comprehensive Response to the Global Banking Crisis' https://www.bis.org/press/p090907.htm accessed 10 April 2019.

[529] Concluding the agreements achieved by Central Bank Governors and Heads of Supervision stemming from the 'Initiatives in Response…' report.

[530] Bank for International Settlements, 'The Basel Committee's Response to the Financial Crisis: Report to the G20' https://www.bis.org/publ/bcbs179.pdf accessed 10 April 2019.

[531] Ibid Section IV.

[532] See Eugene A Ludwig, 'Lessons Learned from the Financial Crisis 2008' https://group30.org/images/uploads/publications/G30_LessonsLearned2008FinancialCrisis.pdf accessed 10 April 2019 which illustrates 7 lessons ranging from reliance on rating agencies to compensation and more alignment with compliant behaviours and making sure that products being sold are suitable. IMF, 'Lessons from the Recent Financial Crisis and the Role of the Fund' https://www.imf.org/en/News/Articles/2015/09/28/04/53/sp062608 Accessed 10 April 2019 which splits the lessons into two sections, private and public ranging from governance structure requiring improvement and investors needing to undertake their own due diligence in the former, and improvement of the regulatory framework and incentives to explore the problems in risks management systems in the latter. Also see, Martin Wolf, 'Lessons to be Learnt from the Financial Crisis' *Financial Times* (London, 1 July 2018) https://www.ft.com/content/ddea2c54-478b-11dd-93ca-000077b07658 accessed 10 April 2019.

banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source…improve risk management and governance…strengthen banks' transparency and disclosures'.[533] These aims endeavour to enforce the primary statement purported by the Basel Committee which is stipulated as, '"Basel III" is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision, to strengthen the regulations, supervision and risk management of the banking sector'.[534] Basel III indicates and represents reform for banking regulation that will see it substantially enhance the capital requirements that preceded it.[535]

It will be apparent in the next section of this chapter that a different approach has been taken in contrast to Basel I and II. Where the former two iterations primarily focused on bank loss reserves and how much a bank should put to one side, Basel III considers loss reserves from other aspects of borrowing and bank deposits. It forms both macro and micro prudential approaches which should be more coherent and, in theory, provide greater durability.[536] In essence, this expands on the previous two iterations and has taken into account the criticisms and events from the financial crisis.[537] Therefore, perhaps it is best to view Basel III in

[533] Bank for International Settlements, 'International Regulatory Framework for Banks (Basel III)' http://www.bis.org/bcbs/basel3.htm accessed 13 October 2015.
[534] Ibid.
[535] M McKee and C Barker, 'Basel III Announced' (2010) 73(Dec) Euro News 6, 6.
[536] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 12.
[537] Bank for International Settlements, 'History of the Basel Committee' https://www.bis.org/bcbs/history.htm accessed 19 April 2018.

light of not truly superseding Basel II but rather enhancing, working alongside and continuing the work of Basel II.[538] This would coincide with Schwerter's view who noted that Basel III is a sound advancement, however there are still improvements to be made[539] such as risk weighted leverage ratios.[540] This will be discussed later in this chapter.

It should be noted at this point and before Basel III is inspected, that there are two areas which affect the banking scenery: ring-fencing (implementation 2019) and non-performing loans[541] (NPLs) which are currently being discussed by the Basel Committee and other peer groups such as the European Central Bank[542] (ECB) and FSB.

Ring fencing[543] a term whereby risky elements of a bank's business are separated from the non-risky retail elements i.e. the separation of retail banking from investment banking. It is to safeguard the ordinary citizen against the otherwise riskier dealing of a bank.[544] For instance, in the

[538] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 434.
[539] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 348-350.
[540] Ibid 349.
[541] A loan that is close to being in default or is in default.
[542] The central bank for 19 EU countries.
[543] Also see G Walker, R Purves and M Blair, 'Banks and Banking' in G Walker, *Financial Services Law* (4th edn, Oxford University Press 2018) 724-727.
[544] Financial Conduct Authority, 'Ring-fencing' https://www.fca.org.uk/consumers/ring-fencing accessed 12 March 2018.

United Kingdom this should come into full force 2019[545] and it has been argued that ring-fencing will help in the next banking crisis.[546]

In the United Kingdom, for example, ring fencing can be traced to the Independent Commission on Banking where it was a key recommendation [547] and introduced through the Financial Services (Banking Reform) Act 2013. [548] This has been included in other legislation.[549]

By separating core retail banking from investment banking, it is envisaged this will provide support for banks. For example, if part of a bank fails (ring fenced or non ring fenced) it should be possible to manage the failed part without government intervention. Equally, tax payers should not be called on. The optimistic standpoint is that ring fencing will curtail financial crises or allow for a reduction in the impact of a financial crisis.[550]

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[545] Caroline Binham and Emma Dunkley, 'Regulators get ready to Authorise 'Ringfenced' UK Banks' *Financial Times* (London, 19 August 2017) https://www.ft.com/content/5ca81a48-8372-11e7-a4ce-15b2513cb3ff accessed 12 March 2018.
[546] Financial Times, 'Ringfencing Will Help in the Next Banking Crisis' *Financial Times* (London, 10 January 2017) https://www.ft.com/content/fddb110a-d746-11e6-944b-e7eb37a6aa8e accessed 12 March 2018.
[547] Gov.uk, 'Ring-Fencing Information' https://www.gov.uk/government/publications/ring-fencing-information/ring-fencing-information accessed 9 April 2019.
[548] Financial Services (Banking Reform) Act 2013.
[549] Financial Services and Markets Act 2000 (Ring-Fenced Bodies and Core Activities) Order 2014, Financial Services and Markets Act 2000 (Excluded Activities and Prohibitions) Order 2014, Financial Services and Markets Act 2000 (Banking Reform) (Pensions) Regulations 2015, Financial Services and Markets Act 2000 (Ring-Fenced Bodies. Core Activities, Excluded Activities and Prohibitions) (Amendment) Order 2016.
[550] See FCA and PRA for additional material. Financial Conduct Authority, 'Ring-fencing' https://www.fca.org.uk/consumers/ring-fencing accessed 9 April 2019. Bank of England,

The second area, NPLs can be described as:

> '…the sum of borrowed money upon which the debtor has not made his scheduled payments for at least 90 days. A nonperforming loan is either in default or close to being in default. Once a loan is nonperforming, the odds that it will be repaid in full are considered to be substantially lower'[551]

and it would seem that they have gone unnoticed. Essentially, NPLs are loans that are of late payment in nature or unlikely to be repaid. The consequence of such is that the lender will be disadvantaged and exposed to financial reverberations if, for example, many borrowers are late in paying or do not pay.

Unfortunately, there is absence of a universal categorisation of NPLs[552] and definitions can differ between countries. Furthermore, there is no agreement on what the criteria should be.[553] Considering that loans are one of the largest items on a bank's balance sheet, then it seems bizarre that there is no universal definition and the fact that it changes between

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'Structural Reform' https://www.bankofengland.co.uk/prudential-regulation/key-initiatives/structural-reform accessed 9 April 2019.

[551] Investopedia, 'Nonperforming Loan - (NPL)' https://www.investopedia.com/terms/n/nonperformingloan.asp accessed 12 March 2018.

[552] Bank of England, 'Non-performing Loans: Regulatory and Accounting Treatments of Assets' https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2016/non-performing-loans-regulatory-and-accounting-treatments-of-assets.pdf?la=en&hash=6475E061079B70B6371688336E5FBFC634225C3D page 1 accessed 19 April 2018.

[553] Ibid page 42.

countries [554] is worrying. NPLs are being discussed by the Basel Committee which is logical considering that it was a big problem during the financial crisis due to high debts and bad loans causing significant harm for banks.[555] That being said, there has been no breakthrough yet.[556]

The European Commission note that there are still high levels of NPLs in EU member states even with a decreased amount since 2014.[557] The outlook for banks with a high amount of NPLs is damaging due to impact on profitability and the ability to lend reduced.[558]

Ring-fencing and NPLs have been acknowledged here because they are two areas which are either being implemented like the former or being discussed like the latter, arguably as a result of the financial crisis. However, both are out of the scope and remit of the research and will not be discussed further. Additionally, ring-fencing is not a response directly

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[554] Springer, 'Non-performing Loans at the Dawn of IFRS 9: Regulatory and Accounting Treatment of Asset Quality' https://rd.springer.com/article/10.1057/s41261-017-0058-8?wt_mc=Internal.Event.1.SEM.ArticleAuthorOnlineFirst accessed 12 March 2018.
[555] Philipp Hildebrand, 'Hazardous Non-performing Loans Obstruct Europe's Banking Union' *Financial Times* (London, 20 July 2017) https://www.ft.com/content/5dd6562e-662a-11e7-9a66-93fb352ba1fe accessed 12 March 2018.
[556] It should be noted that NPLs are more to do with accountant rules, however, they will have some impact on the banking world and for the Basel regulations.
[557] European Commission, 'Non-Performing Loans (NPLs)' https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/non-performing-loans-npls_en accessed 9 April 2019.
[558] There have been initiatives and measures discussed in an EU capacoity that seek to reduce the impact of NPLs. See, for example, European Commission, 'Commission Measure to Address the Risks Related to NPLs' https://ec.europa.eu/info/publications/180314-proposal-non-performing-loans_en accessed 9 April 2019.

from the Basel Committee and NPLs is an area that is too large to be discussed. They have been highlighted because they fall within the timeline of Basel III and both look to strengthen financial stability.

The next section will detail the enhancements and reforms[559] made, both new and existing, to show that Basel III appears to be the most robust iteration to date. As Abdullah and Khadaroo explain, 'The Basel III regulation attempts to improve banks' capital and liquidity requirements and their resilience to shocks and panic, such as the fear of bank runs'.[560]

BASEL III - STRUCTURE AND BUFFERS

Unlike the differences between Basel I and II where there was a clear distinction, Basel III is more of an enhancement and in most part it has added to the previous two iterations rather than replacing them completely (particularly Basel II) and works alongside to enable a stronger set of regulations.[561] Therefore, in a dissimilar fashion to the structure used for Basel I and II, this section will look at some of the

[559] Bank for International Settlements, 'Basel Committee on Banking Supervision Reforms - Basel III' http://www.bis.org/bcbs/basel3/b3summarytable.pdf accessed 13 October 2015.
[560] A Abdullah and I Khadaroo, 'Addressing the Financial Crisis: Perceived Effectiveness of Basel III' (2014) 29(3) JIBLR 135, 139.
[561] Karanam Kavitha and H S Roopa, 'Changing Basel Reforms for Banking Sector' http://ijemr.in/wp-content/uploads/2018/01/Changing-Basel-Reforms-for-Banking-Sector.pdf page 6 accessed 4 November 2015.

major enhancements and changes made by the Basel Committee.[562] The main areas include:

- Total capital ratio
- Tier 1 capital
- Tier 2 capital
- Tier 3 capital
- Conservation capital buffer
- Countercyclical capital buffer
- Leverage ratio

What can be seen from the areas detailed is that, '…the industry is witnessing a seismic shift from "ubiquity" to "precision"'. [563] Thus highlighting the significant changes made in Basel III. Barfield is of the view that this is due to increased capital and liquidity costs. The author would stipulate that this precise approach will help with further financial crises by increasing capital and liquidity measures.

There has also been other important work undertaken by the Basel Committee[564] which has contributed to Basel III and effective banking

[562] Furthermore, this is due to Basel III taking Basel II forward with improvements to capital ratios as well as introducing new mechanisms to strengthen banking regulation. Due to this, a step-by-step structure will not be given.
[563] R Barfield, 'Strategic Context' in R Kibble and J Worsnip, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 21.
[564] These will not be analysed specifically although certain parts of the documents mentioned will link to material discussed.

practices since the financial crisis. These have included: an update on finalising post crisis reforms[565] which highlights the regulatory responses as well as what is left to do, including items such as supervision and implementation; better alignment of remuneration [566] which tackles excessive risk taking (prompted by incentives) by aligning remuneration with risk and performance; and a bank resolution framework[567] aimed at banks that are too big to fail and which have required tax payer bailouts in the past.

Total capital ratio

Total capital ratio has undergone a massive overhaul in Basel III from what was 8 percent seen in Basel II to a potential 13 percent[568] which includes new capital buffers. One of the main reasons for this jump in percentage points was that during the financial crisis many banks did not possess enough equity to withstand large losses. Consequently, the Basel Committee decided to assess and increase the total capital ratio required by a bank against RWA.[569] To comprehend this increase one needs to consider how this is constructed i.e. total capital ratio constitutes Tier 1

[565] Bank for International Settlements, 'Finalising Post-Crisis Reforms: An Update' https://www.bis.org/bcbs/publ/d344.pdf accessed 8 April 2019.
[566] Bank for International Settlements, 'Range of Methodologies for Risk and Performance Alignment of Remuneration' https://www.bis.org/publ/bcbs194.pdf accessed 8 April 2019.
[567] Bank for International Settlements, 'Bank Resolution Framework – Executive Summary' https://www.bis.org/fsi/fsisummaries/brf.pdf accessed 8 April 2019.
[568] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 9.
[569] Walter W Eubanks, 'The Status of the Basel III Capital Adequacy Accord' https://www.fas.org/sgp/crs/misc/R41467.pdf page 2-6 accessed 30 October 2015.

and 2 capital and two new buffers; conservation capital and countercyclical capital which fall under Tier 1.[570] It is a major change and one which reinforces bank's capital base.[571]

What will be alluded to over the coming subsections is that the total capital ratio is composed of several elements that are further split into common equity (core capital) and non-core capital. When exploring the potential risks and shortcomings of capital ratios later in the chapter, it will be affirmed that, '…the new definition of capital is much more restrictive than the pre-existing regime. Not only are minimum capital ratios much higher, but the definition of what qualifies as capital is much narrower…'.[572] Furthermore, it has been stated, '…banks are still able to shift their promises and hence, also shrink their capital requirements. Banks can easily deal with the new Basel regulations, because they avoid them by finding loopholes'.[573] Examples of such can be seen with Goldman Sachs and Sumitomo Mistui Financial Group.[574] Although, Masters et al. say that people familiar with this deal and the professional

[570] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 64 accessed 30 October 2015.
[571] See J de Larosiere, 'Structural Bank Reforms: An Illusory Solution' (2015) 10 JIBFL 636, 639.
[572] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 86.
[573] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 18.
[574] Brooke Masters, Tracey Alloway and Shahien Nasiripour, 'Banks Face Removal of Capital Loophole' *Financial Times* (London, New York, Washington, 24 March 2013) https://www.ft.com/content/f826e6d8-946c-11e2-9487-00144feabdc0 accessed 19 April 2018.

relationship of purchased protection was never intended to reduce regulatory capital.[575]

Tier 1 capital

When contemplating Tier 1 capital one must understand that the primary purpose is to absorb losses on a going-concern basis i.e. the ability by a bank to absorb losses whilst still trading.[576] It is without doubt one of the most crucial and fundamental parts of the Basel regulations, hence the revised measures. Foster notes that for large banks the failure of instruments such as preferred stocks were overlooked and in the market place this jeopardised the credit worthiness of those banks.[577] It is because of this that Basel III has increased Tier 1 percentages. In many ways it is a first line of defence for banks and enables a bank to operate without entering insolvency proceedings, administration or liquidation.[578] Therefore, creating a strong line of defence with the correct amount of capital will allow a bank to stand a better chance of protecting them self

[575] Ibid.
[576] European Commission, 'Capital Requirements - CRD IV/CRR - Frequently Asked Questions' http://europa.eu/rapid/press-release_MEMO-13-690_en.htm What is the difference between Tier 1 and Tier 2 capital? accessed 14 January 2016.
[577] Jack Foster, 'Changes in US Banking Regulation - Tier 1 Capital Requirements' https://www.nyif.com/articles/changes-in-us-banking-regulation-tier-1-capital-requirements accessed 19 April 2018.
[578] Clayton Utz, 'Basel Introduces Tough Capital Rules Affecting Hybrid Securities' http://www.claytonutz.com/publications/news/201101/17/basel_introduces_tough_capital_rules_affecting_hybrid_securities.page accessed 18 November 2015.

against financial losses. As a result, Basel III will force banks to hold more capital.[579]

Excluding the aforesaid conservation and countercyclical capital buffers which will be discussed at a later point, Tier 1 capital has been given a tighter definition[580] and can be separated into two parts, Tier 1 common equity or core capital (CET1), and additional Tier 1 capital or non-core capital. These definitions can now be applied.

CET1 is crucial in many ways for the survival of a bank as it includes the core capital required against RWA. When analysing Basel III one can see that there are very strict requirements that stipulate what categories fall under CET1, the most important one being common shares/stocks.[581] Other categories include items such as stock surplus, retained earnings, other income or disclosed reserve and regulatory adjustments.[582]

CET1 and common shares is when a bank issues stock to investors in return for money. Importantly here is that not all common stock can be categorised as CET1. In order to be classified as common stock the stock

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[579] Brooke Masters, 'Banks to Hold More Capital Under Basel III' *Financial Times* (London, 25 July 2012) http://www.ft.com/cms/s/0/93c7415a-d672-11e1-ba60-00144feabdc0.html#axzz3xDQCpsRY accessed 14 January 2016.
[580] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 435.
[581] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 10.
[582] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 13-15 accessed 30 October 2015.

needs to be the most subordinated claim in a situation of a liquidation process i.e. when there is no liquidation process then no shares can be paid back or cancelled from the bank.[583]

CET1 stipulates a 4.5 percent minimum level of capital to RWA and additionally to this, hence the name additional Tier 1 capital, is the requirement that a bank must put aside the equivalent to 1.5 percent of RWA which will include hybrid instruments to aid loss absorbing.[584] Therefore, additional Tier 1 capital includes items not included in CET1.[585] One of the main parts of additional Tier 1 capital is preferred stocks and this type of stock normally pays the most in dividends, but preferred stock does not grant any voting power to the owners. In comparison to common stocks, preferred stocks are only a subordinate part of a banks' deposits and creditors. However, like common stocks preferred stocks have no maturity date.[586]

At this stage (excluding the new capital buffers) total capital ratio stands at a minimum 6 percent of RWA. This consists of 4.5 percent CET1 and 1.5 percent additional Tier 1 capital and was applicable from 1 January

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583 O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 11.
584 F Cannata and M Quagliariello, 'A Brazilian Perspective on Basel III' in L Rodrigues and P Oliveira, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 411.
585 Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 15 accessed 10 November 2015.
586 O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 11.

2015.[587] This is an increased difference from Basel II which set the total Tier 1 capital at 4 percent.[588]

Tier 2 capital

Tier 2 capital is now a single category and the upper and lower terminology has been amended.[589] Basel III has kept the lower tier which decreased from 4 percent to 2 percent on 1 January 2015.[590] Essentially, Basel III has unified Tier 2 capital and changed its definition.[591]

When considering Tier 2 capital the vital point to remember is that it comes into contention (gets absorbed) when a bank has to declare insolvency. This can be ascertained from Basel III which states Tier 2 capital as gone-concern[592] i.e. capital that is given to depositors when a bank is either winding-up or in a state of insolvency; leading law firms

[587] Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 24 accessed 10 November 2015.
[588] Ibid page 10 accessed 14 January 2016.
[589] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 72.
[590] Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 21-22 accessed 10 November 2015.
[591] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 435.
[592] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 12 accessed 30 October 2015.

concur with such.[593] Accordingly, it is still an important mechanism to have in place to protect a bank from financial losses. For example, Baumgartner[594] notes that Tier 2 capital will absorb losses during a state of insolvency, although, '…the money of an issuer is not guaranteed because it gets absorbed in the case of a default'.[595]

Basel III states that for an instrument to be included there is a five year minimum maturity period and it will amortise in the remaining five years before maturity.[596] What this means is that as a general rule a bank will not be able to end its position for those assets. Under Basel III there are only two exceptions to the general rule. One, when a bank is able to issue a new asset that is able to generate the same capital if not more than the previous asset. Two, when a bank can show that all other assets in possession resemble a higher amount than the 2 percent minimum required by Basel III.[597]

At this stage (excluding new capital buffers) total capital ratio stands at a minimum 8 percent. This consists of 4.5 percent CET1, 1.5 percent

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[593] Clayton Utz, 'Basel Introduces Tough Capital Rules Affecting Hybrid Securities' http://www.claytonutz.com/publications/news/201101/17/basel_introduces_tough_capital_rules_affecting_hybrid_securities.page accessed 30 October 2015.
[594] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 11.
[595] Ibid.
[596] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' https://www.bis.org/publ/bcbs189.pdf page 18 accessed 26 March 2019.
[597] Ibid.

additional Tier 1 capital and 2 percent Tier 2 capital. This was applicable from the 1 January 2015.[598]

Tier 3 capital

When considering Basel I and II it was highlighted that Tier 3 capital was not introduced until many years after Basel I was published and was then carried forward to Basel II. A further change occurred with Basel III in that Tier 3 capital will now be abolished[599] and phased out.[600] This was one of the first major changes that would occur in the third iteration, the next two being capital buffers.

Taking into account that Tier 3 capital no longer exists, the other two tiers are not new forms of capital. The only changes being that the definition of capital was tightened,[601] a higher minimum total Tier 1 capital from 4 percent to 6 percent introduced, a higher minimum CET1 from 2 percent to 4.5 percent introduced,[602] and the reduction of Tier 2

[598] Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 24 accessed 10 November 2015.
[599] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 2 accessed 30 October 2015.
[600] There are no transitional provisions in place however it has been stated that the transition period will be complete by Basel III implementation. See Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 27 accessed 3 April 2019.
[601] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 438-439.
[602] Ibid 435-436.

capital from 4 percent to 2 percent was applied (excluding new capital buffers).[603] Denning believes the increases are a good thing, specifically CET1 and welcomes the changes being made.[604] On the face of it this would seem the case. However, as will be illuminated in due course these increases may present some issues such as the cost of implementation.

The arrival of capital buffers

In theory the Basel Committee could not continue Tier 1 and 2 capital in the same manner as it operated in Basel II. Improvements were needed after much criticism and as a result of the ramifications from the financial crisis. The problem was that during the financial crisis the possibility of borrowers paying back their loans began to increase leading to and during the financial crisis, this in turn created a huge burden for many banks.[605] This was further exacerbated by the callous behaviour shown by banks with large bonuses still being paid to employees in the midst of the recession.[606] The author accepts that some areas of a bank's business is

[603] Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 24 accessed 14 January 2016.
[604] Steve Denning, 'Will Higher Capital Requirements Make the Banking System Safe?' https://www.forbes.com/sites/stevedenning/2013/06/25/will-higher-capital-requirements-make-the-banking-system-safe/#5cacf28d77c6 accessed 19 April 2018.
[605] Eli Lehrer, 'Subprime Borrowers: Not Innocents' http://www.businessweek.com/debateroom/archives/2008/03/subprime_borrowers_not_innocents.html accessed 10 November 2015.
[606] James Quinn, 'Bankers to Receive Huge Bonuses Despite Financial Crisis' *The Telegraph* (New York, 15 April 2009) http://www.telegraph.co.uk/finance/recession/5154915/Bankers-to-receive-huge-bonuses-despite-financial-crisis.html accessed 30 October 2015.

profitable compared to other areas that are not, equally, to recruit and retain bright individuals requires money. However, this contributed to the de-stabilisation of the Basel regulations and banking world, and the bonuses would have contributed to the demise for some of those banks.[607]

As already discussed, for many banks there was insufficient levels of capital during this period of time. Some banks were unable to recognise liquidity risk, some banks misinterpreted liquid for illiquid assets[608] and in turn had low levels of capital to counter financial downturn.[609] The Basel Committee stated that banks had failed to take account of liquidity risk and the base principles thereof, even when there was an array of liquidity to be had.[610] To combat this problem and improve financial stability, the Basel Committee introduced two new mechanisms which would attach to the Tier 1 capital framework, otherwise known as the conservation capital buffer and the countercyclical capital buffer. Both add up to 2.5 percent resulting in a potential 5 percent extra capital

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[607] Ian Tonks, 'Bankers' Bonuses and the Financial Crisis' http://www.voxeu.org/article/bankers-bonuses-and-financial-crisis accessed 10 November 2015.

[608] Alberto Alvarez and others, 'Liquidity: Managing an Undervalued Resource in Banking After the Crisis of 2007-2008' http://www.mckinsey.com/client_service/risk/latest_thinking/working_papers_on_risk page 2-3 accessed 10 November 2015.

[609] INTOSAI, 'The Cause of the Global Financial Crisis and Their Implications for Supreme Audit Institutions' http://www.intosai.org/uploads/gaohq4709242v1finalsubgroup1paper.pdf page 18-19 accessed 10 November 2015.

[610] Bank for International Settlements, 'Principles for Sound Liquidity Risk Management and Supervision' https://www.bis.org/publ/bcbs144.pdf page 1 accessed 19 April 2018.

needed for banks to find, and this positively means more funds are available to defend a bank during a financial crisis. The former can be lowered in times of distress thus showing flexibility, the latter can protect against excessive credit growth and is activated only during this time.[611]

In theory, a bank should save more money in economic prosperity to be able to absorb financial losses when economic hardship arrives. If applied correctly a bank should be able to maintain stability and have the ability to regain capital at a faster rate. Whilst this is a plausible concept, according to Pinsent Masons it is still too early to say whether this mechanism will succeed. The full scope and effect of the third iteration will not be clear for some time.[612]

Essentially, the conservation capital buffer was introduced to encourage capital discipline when banks may be short of capital. The countercyclical capital buffer was introduced to stop the cyclicality of risk.[613] These will now be explained in more detail.

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[611] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 345.
[612] Pinsent Masons, 'Banking and Restructuring The Godfather of Regulation' http://www.pinsentmasons.com/PDF/GodfatherOfRegulation.pdf accessed 14 January 2016.
[613] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 149.

Conservation capital buffer

The conservation capital buffer is an additional percentage that a bank is required to account for in order to maintain stability and is in the form of CET1. It can be defined as, '…to ensure that banks build up capital buffers outside periods of stress which can be drawn down as losses are incurred'.[614] It can be used during times of stress which in turn will constrain earning distribution. As McKee and Barker point out, the intention by the Basel Committee it seems is for the conservation capital buffer to support strong supervision and bank governance.[615] For example, it is to a certain degree in place to curtail some of the behavior seen at the beginning of the financial crisis with distributions of dividends still being paid despite the financial turmoil that was unfolding.[616]

Bearing the above in mind, it has been discussed so far that Tier 1 capital before capital buffers stands at 4.5 percent CET1 and 1.5 percent additional Tier 1 capital. With the conservation capital buffer this increases the minimum amount of CET1 by 2.5 percent. Therefore, at this stage CET1 is set at a minimum of 7 percent (4.5 + 2.5) that a bank should hold. The figure of 7 percent will not come to fruition until 1

[614] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 54 accessed 30 October 2015.
[615] M McKee and C Barker, 'Basel III Announced' (2010) 73(Dec) Euro News 6, 6.
[616] R Barfield, 'Procyclicality' in M Mars, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters, 2011) 245.

January 2019.[617] What can be ascertained from this is that more capital is now required by banks, in theory this should improve a bank's resilience to financial repercussions in the market.

Banks should build their reserves of CET1 in times of economic prosperity[618] so that in times of economic hardship these reserves will be hit first to absorb losses. Matten purports, 'The capital conservation buffer is intended to be built up in good times to enable a more resilient banking sector to weather the storms of a downturn or even another crisis'.[619] Although, as Matten explains, whether the conservation capital buffer will erode in adverse conditions whilst attracting sanctions remains to be seen. This will be alluded to in the weaknesses section. What should be stated at this point is that the idea behind the conservation capital buffer is that to build capital reserves in periods of economic prosperity, which in the author's opinion is feasible and logical, then a bank will be able to build sufficient funds to combat periods of stress and market stagnation. Basel III stipulates rules that should be abided by in order for the conservation capital buffer to be brought back to its original level of 2.5 percent when a financial crisis occurs. There are three ways in which a bank can increase its depleted percentage level: decrease annual

[617] Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 24 accessed 10 November 2015.
[618] F Cannata and M Quagliariello, 'A Brazilian Perspective on Basel III' in L Rodrigues and P Oliveira, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 411.
[619] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 81.

dividend payments, decrease share buybacks, or decrease bonus payments.[620] It would seem that these mechanisms are in place to rectify the negative consequences of market instability during less prosperous times.

The Basel Committee has provided guidance and a table which states five categories on how a bank should allocate funds at different levels from 4.5 percent to the 7 percent and above standard.[621] For example:

> 'Depending in which category the capital of a bank is the more money it has to save in upcoming periods to recover its buffer. E.g. a bank's ratio is 5.5%. Therefore its conservation buffer is only at a level of 1% and has to recover another 1.5 percentage points. According to figure 4, a bank has to save a minimum of 80% of its upcoming earnings to do so'[622]

The figure 4 that Baumgartner refers to is a table taken from Basel III that shows the reaction between common equity percentage and minimum capital conservation ratios expressed as percentages.[623] The

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[620] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 54 accessed 30 October 2015.
[621] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 56 accessed 30 October 2015.
[622] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 13-14.
[623] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 56 accessed 30 October 2015.

way in which a bank can increase their conservation capital buffer using the example stated is by adopting any of the aforementioned three i.e. decrease dividend payments, share buybacks, or bonuses. The only other way for a bank to make up the percentage level would be to raise new capital. This appears to be a solid approach and one which offers several routes for banks to take on building capital levels back to the required levels stipulated by the Basel Committee.

Furthermore, the Basel Committee detailed what is unacceptable behaviour in relation to banks that have depleted their capital buffers. What this means is that banks should not continue to distribute dividends by using future predictions of recovery.[624]

At this stage, total capital ratio stands at 4.5 percent CET1, 2.5 percent conservation capital buffer which contains CET1, 1.5 percent additional Tier 1 capital (non-core capital), and 2 percent Tier 2 capital resulting in a minimum 10.5 percent total capital ratio to RWA. Similar to the minimum CET1 figure of 7 percent, the minimum total capital ratio will not reach 10.5 percent until 1 January 2019.[625] This is purely to do with the fact that for some banks it will take several years to allocate such funds and comply with this percentage.

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[624] R Barfield, 'Procyclicality' in M Mars, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters, 2011) 246.

[625] Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf page 24 accessed 10 November 2015.

Whilst having more capital reserves does not necessarily mean a bank will survive a financial crisis, as other factors matter such as liquidity which will be discussed in due course, it is in the author's view a significant improvement in that by requiring a bank to hold more capital will assist in defending against economic instability. Overall, the aim it seems is to create an environment whereby there is sufficient capital for banks and the financial sector to continue their business activities.

Countercyclical capital buffer

When considering the countercyclical capital buffer one should see it as a complementary tool to the conservation capital buffer in that it is an extra form of money that can be utilised in an emergency. It can be described as having been created, '…to protect the financial system from periods of excess aggregate credit growth, avoiding a build-up of systemic risk in this phase of the credit cycle'.[626] In essence, it is to further mitigate pro-cyclicality and the Basel Committee have stipulated that its main aim is to protect in periods of excess aggregate credit growth and it may also help against the build up of credit cycle.[627]

The countercyclical capital buffer will work as a macro-prudential tool i.e. it will control the credit flow at a consistent level which is adjusted by

[626] F Cannata and M Quagliariello, 'A Brazilian Perspective on Basel III' in L Rodrigues and P Oliveira, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 411-412.
[627] Bank for International Settlements, 'Countercyclical Capital Buffer (CCyB)' https://www.bis.org/bcbs/ccyb/ accessed 19 April 2018.

economic cycle. The benefit of this is that it should reduce the lending of a bank in times of credit expansion. As Matten explains, 'The counter-cyclical capital buffer is a macro-level buffer that will be built up when there are signs of "excessive" credit growth'.[628] During these periods of credit growth the countercyclical capital buffer should act to slow down lending, some have described it as, '…a brake on bank lending'[629] and this is enabled by the cost of credit increasing. When applied correctly a bank should have credit remaining during periods of stress.

The percentage required by a bank when allocating money aside for this buffer is not pre-determined, it is a range of 0-2.5 percent which will be determined by the credit growth of said country.[630] The reason why the Basel Committee did not state a precise figure unlike the conservation capital buffer, is because national authorities/regulators (regulators) are able to set this percentage and this is largely because they are in a more commanding and better position to determine what percentage is appropriate.[631] Therefore, if a country was to conclude that there was a danger of excessive growth in credit building, then the countercyclical capital buffer would be implemented and banks would have to allocate

[628] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 82.
[629] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 96.
[630] M McKee and C Barker, 'Basel III Announced' (2010) 73(Dec) Euro News 6, 6.
[631] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 57-59 accessed 30 October 2015.

monies for this buffer.[632] This is arguably a good thing and as Binham et al. note, will force banks to set aside capital.[633]

Banks should not be alarmed by the countercyclical capital buffer as the regulator cannot randomly announce when it is needed, but rather investigate and analyse micro and macro economical facts of the economy before making a decision. Credit growth over the last few years should be considered and development of gross domestic products analysed, amongst other economic data. Once collated, an estimate on what the future growth will look like for the bank will be derived. If needed, the regulator will then notify the bank to how much more is required for future loan business. A bank will have twelve months to reach the percentage requested[634] and restrictions can be put in place to support this task. Equally, the abolition of such requirement(s) can take place if it is decided that the bank no longer needs this buffer. As Binham et al. suggest, the buffer can be turned off during bad times.[635] If no

[632] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 82.
[633] Caroline Binham, Gemma Tetlow and Martin Arnold, 'Bank of England Tells Lenders to Increase Capital Buffers by £11.4bn' *Financial Times* (London, 27 June 2017) https://www.ft.com/content/9bc99294-5b1b-11e7-9bc8-8055f264aa8b accessed 19 April 2018.
[634] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 58 accessed 30 October 2015.
[635] Caroline Binham, Gemma Tetlow and Martin Arnold, 'Bank of England Tells Lenders to Increase Capital Buffers by £11.4bn' *Financial Times* (London, 27 June 2017) https://www.ft.com/content/9bc99294-5b1b-11e7-9bc8-8055f264aa8b accessed 19 April 2018.

longer required then those funds can be allocated to other areas of the bank.

In general, banks that possess the right amounts of capital should have limited problems when a financial crisis develops. If banks operate in several jurisdictions then an average percentage must be implemented to all those jurisdictions where the bank has credit exposure.[636] Similar to the conservation capital buffer it is still too early to infer how successful this mechanism will be, but at this moment in time it is very much a strength of Basel III.

The countercyclical capital buffer brings an end to the total capital ratio that a bank must now hold under Basel III. What has been discussed comprises of Tier 1 common equity (core capital) CET1 at 4.5 percent, an additional Tier 1 capital (non-core capital) at 1.5 percent, a conservation capital buffer in the form of CET1 at 2.5 percent as well as a countercyclical capital buffer in the form of CET1 at 0-2.5 percent, followed by Tier 2 capital at 2 percent. In total, a bank conforming to Basel III will have to potentially hold a maximum 13 percent with a minimum being 10.5 percent total capital ratio[637] if no countercyclical capital buffer is required. If one compares this to the previous arrangements under Basel II then this has increased from 8 percent to

[636] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 96.
[637] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 19.

13 percent. For many banks, trying to gain an extra 5 percent of capital may be a long and arduous task, however in the aftermath of the financial crisis all banks should want to arrive at this standard in order to protect and continue safe trading. That being said, perhaps this is not a common belief with all.[638]

The maximum total percentage of 13 percent will not be complete until 1 January 2019 when other parts of Tier 1 capital are phased in, and it may take several years for some banks to comply. Furthermore, it may not be applicable to some banks as part of the 13 percent will be made up of the regulatory decision to enforce the countercyclical capital buffer.

Leverage ratio

The Basel Committee decided that RWA should not be the only way that a bank and regulator assess capital requirements. The Basel Committee agreed that this was to introduce a simple and transparent mechanism to supplement other measures in risk based capital requirements.[639] For clarity, leverage ratio has been described by the Basel Committee as, '…a simple, transparent, non-risk based leverage ratio that is calibrated to

[638] The Guardian, 'Japan's 'Quintuple Dip' Recession Delivers a Fresh Blow to Abenomics' *The Guardian* (London, 16 November 2015) http://www.theguardian.com/world/2015/nov/16/japan-enters-fifth-recession-in-seven-years-in-latest-blow-for-abenomics accessed 18 November 2015.
[639] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 60 accessed 19 April 2018.

act as a credible supplementary measure to the risk based capital requirements'.[640]

One can interpret leverage ratio as an additional form of security that acts as a defence mechanism. The Basel Committee said that the underlying cause of the financial crisis was due to excessive on and off balance sheet leverage[641] and this is why leverage ratio has been introduced in Basel III. Additionally, the Basel Committee indicates that a bank need only compare Tier 1 capital with total exposure,[642] the intention being to restrict a build-up of leverage that will stop measurement error and model risk.[643] Simply put, 'The objective of the leverage ratio is to serve as a back-stop to the risk-based measure'.[644] In addition, Kellermann and Schlag state, 'The BCBS (2009) considers the leverage ratio as the appropriate instrument, to safeguard the system of financial regulation and supervision against failure in risk assessment'.[645] It should be said that for those banks that have a huge

[640] Ibid page 61 accessed 18 November 2015.
[641] Bank for International Settlements, 'Basel III Leverage Ratio Framework - Executive Summary' https://www.bis.org/fsi/fsisummaries/b3_lrf.htm accessed 19 April 2018.
[642] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 61 accessed 30 October 2015.
[643] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 22-23.
[644] Stefan Walter, "Basel III: Stronger Banks and a More Resilient Financial System' http://www.bis.org/speeches/sp110406.pdf page 4 accessed 10 December 2015.
[645] K Kellermann and C Schlag, 'Occupying Risk Weighting: How the Minimum Leverage Ratio Dominated Capital Requirements - A Swiss Example' (2013) 21(4) JFR & C 353, 365.

leverage of low risk on their balance sheet, then this will be a material factor as most will exceed the minimum figure required.[646]

The leverage ratio does not fall under the category of Tier 1 or 2 capital, therefore this minimum percentage is not added to the aforementioned figures. For leverage ratio, a bank must hold a minimum of 3 percent. This figure was tested between 1 January 2013 and 1 January 2017.[647] Any adjustments to be completed in the first half of 2017 with migration to Pillar 1 at the beginning of 2018[648] (for global systemically important banks this will be 1 January 2022).[649] Also, and similar to Tier 1 capital where specific capital is stipulated under Basel III i.e. categories, the leverage ratio must be calculated using a specific method to determine exposure of default.[650]

Leverage ratio appears intricate with several elements that need to be taken into consideration when calculating. Some of those considerations include the value of derivates (actual value on balance sheet plus future value) and if a bank is unable to reduce the value of some of its assets.[651]

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[646] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 151.
[647] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 62 accessed 30 October 2015.
[648] Ibid page 63.
[649] Bank for International Settlements, 'Basel III: Finalising Post-Crisis Reforms' https://www.bis.org/bcbs/publ/d424.pdf page 142 accessed 21 March 2018.
[650] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 61-63 accessed 30 October 2015.
[651] Ibid.

The leverage ratio has gained popularity since its introduction with some countries bringing in higher percentage levels.[652]

It is stated that, 'The Basel III leverage ratio standards ensure consistency between the capital and exposure measures in the design of the leverage ratio…'.[653] This is a difficult task because of it being a new mechanism as well as the disparity between many banks. Only time will tell in order to gauge how successful this mechanism is, but one criticism already apparent is that leverage ratio relies a lot on mathematical models and Kellermann and Schlag argue it to be based on wrong assumptions.[654]

In addition to the above, leverage ratio is considered to be a supplementary measure and in reality it should be a primary tool to combat capital risks according to Moosa.[655] It may also be difficult for some banks to comply, for instance those banks that are primarily based on public sector lending.[656] These banks will need to change, this could be in the form of adapting their business model.

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[652]A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 151.
[653] Bank for International Settlements, 'Instructions for Basel III Monitoring' https://www.bis.org/bcbs/qis/biiiimplmoninstr_aug16.pdf page 22 accessed 26 march 2019.
[654] K Kellermann and C Schlag, 'Occupying Risk Weighting: How the Minimum Leverage Ratio Dominated Capital Requirements - A Swiss Example' (2013) 21(4) JFR & C 353, 355.
[655] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 133 citing Atkinson (2010).
[656] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 152.

Due to the infancy of the leverage ratio tool, the Basel Committee appreciate that some changes are needed and that over the course of several years leading to the full implementation of Basel III in 2019, amendments may be required. To reiterate, this date will be the 1 January 2017 with a migration date to Pillar 1 estimated on 1 January 2018.[657] On this basis, leverage ratio should be used with caution, not only because of its infancy but also because if calibrated poorly then this could lead to unfortunate consequences.[658] It is not surprising then that Petitjean suggests that it should be handled with caution.[659] In addition it is stated, '…the minimum leverage ratio does not always function as the desired backstop…If calibrated incorrectly, the minimum leverage ratio instead becomes the binding capital requirement'.[660] Clearly, due care is strongly required. Kellermann and Schlag suggest that rather than having a minimum leverage ratio, a base risk weight should be adopted in which a minimum threshold would be created that reduces the impact of potential flaws seen in risk assessments. What this essentially means is that banks do not have as many options to deflate their own RWA, for that reason it is an effective backstop unlike minimum leverage ratio. The author of the research believes that leverage ratio has had a positive

[657] F Cannata and M Quagliariello, 'A Brazilian Perspective on Basel III' in L Rodrigues and P Oliveira, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 412.
[658] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 22-23.
[659] Ibid 23.
[660] K Kellermann and C Schlag, 'Occupying Risk Weighting: How the Minimum Leverage Ratio Dominated Capital Requirements - A Swiss Example' (2013) 21(4) JFR & C 353, 354

response to date and from the period 2007 to 2015 there has been almost a doubling of average leverage ratio.[661]

Summary

It has been illustrated how Basel III can be interpreted as an addition to or upgrade from, Basel II, and as such a continuation of the work that Basel I implemented beforehand. In some respects Basel III did not fully supersede but rather strengthened Basel II.

The main enhancements and additions have been noted to highlight how Basel III intends on not only moving the Basel regulations forward and improve banking stability around the world, but to also increase financial stability to limit a financial crisis in the future.

Total capital ratio has increased from what was a minimum 8 percent to a much stronger 13 percent, which encompasses the increases made in Tier 1 capital as well as the creation of the conservation and countercyclical capital buffers that added an extra 5 percent to the total capital ratio figure. In addition there was a reduction of Tier 2 capital from 4 percent to 2 percent. Included is a leverage ratio of 3 percent which does not form part of the total capital ratio that a bank must now hold, but it is a signal of an extra line of defence for banks that should be

[661] D Schoenmaker, 'What Happened to Global Banking After the Crisis?' (2017) 25(3) JFRC 241, 246.

implemented to avoid excess build-up of leverage. This was one of the main problems of Basel II and for the financial crisis.

Basel III appears to be more robust and refined, and to the uninformed person would appear competent. In order to highlight the positive contributions made as well as the negative, the next section of this chapter will arrive at a critical point, strengths and weaknesses. Bearing in mind that capital ratios, CRAs, and VaR will not be examined and will form part of Chapter 4. This is due to the problematic implications that these three areas play in Basel III. Similar to the strengths and weaknesses sections of Basel I and II, it will be illustrated that there are both strong and weak parts of Basel III and that the third iteration is a much improved set of regulations. However, there are flaws that need to be examined and rectified.

STRENGTHS AND WEAKNESSES

When considering Basel III it could be assumed that the third iteration would have few weaknesses and many strengths. Be that as it may, whilst Basel III is a positive step forward for banking regulation it is similar to Basel I and II in that it contains many weaknesses. Before these are considered and to remain consistent with previous chapters, the next part of this chapter will consider some of the positive elements of Basel III.

Strengths

There are many strengths that Basel III has but only a selection of the most important and apparent ones will be discussed. These are and all encompass, the new refined definition of regulatory capital:

- Simplified structure
- Quality of capital
- Quantity of capital

The three points above was very much to do with the inadequacy and transparency issues that plagued Basel I and II. Due to the capital definition weakness, namely insufficient quality of capital and a lack of harmonisation, comes the strength provided by Basel III which improves both the quality and quantity of capital in a simplified structure. In the light of this and to reiterate, some of the improvements made were a more simplified structure, the quality of capital required by a bank was improved, and the quantity of capital required by a bank also improved.[662] The refined definition of capital is more restrictive than before, with capital ratios being much higher and a narrower ambit of what qualifies as capital being introduced with a key focus on common

[662] F Cannata and M Quagliariello, 'The New Definition of Regulatory Capital' in L Meneau and E Sabatini, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 77.

equity.[663] Let that be said, in the author's opinion this is very much a strength. Whilst this may be the case, Barfield suggests that banks need to prepare and have a plan in place, with raising fresh equity a most likely scenario.[664]

Firstly, a more simplified structure was devised that enabled Basel III to be more cohesive and enabled a more refined layout in contrast to Basel II. The three tiers that existed under Basel II were evaluated so that Tier 1 and 2 capital were amended and tightened, Tier 3 was removed altogether. Tier 1 capital now consists of CET1 (core capital) as well as additional capital (non-core capital). This equates to a percentage increase from 2 percent to 4.5 percent CET1 and additional capital being set at 1.5 percent. Tier 2 capital removed the upper and lower limit to now only include the lower limit, the percentage required now stands at 2 percent rather than the previous 4 percent.

By simplifying the structure the Basel Committee concentrated on capital under Tier 1 and what the criteria for that should be, as well as revising the percentage levels of capital to RWA. The Basel Committee removed the upper limit in Tier 2 capital because most banks underused this mechanism, and combined with the fact that the Tier 1 capital cost being

[663] R Barfield, 'Defining Capital' in C Matten, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 86.
[664] Ibid 87.

the same and more beneficial.[665] Tier 3 capital was removed because of the advancements made in market risk over the last several years that meant there was no need to have a separate tier for this element.[666]

Meneau and Sabatini note that one of the crucial improvements implemented was the harmonisation that the Basel Committee tried to create through Basel III. This can be viewed in relation to CET1 where in contrast to Basel II there was a lack of homogeneity resulting in an un-level playing field.[667] Under Basel III this was altered and improved and whilst the minimum capital required is still set at 8 percent to RWA (CET1 and additional Tier 1 capital + Tier 2), the formula is very different. Tier 1 capital now comprises of 6 percent of which 4.5 percent must come in the form of CET1. If compared to Basel II, the overall minimum capital to RWA was that the minimum 8 percent could be made of 4 percent Tier 1 capital and 4 percent Tier 2 capital; the problem here was that Tier 1 capital is more vital than Tier 2 capital. By making this significant change means that a bank can no longer split evenly between Tier 1 to 2 capital due to the shift of percentage changes.[668]

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[665] F Cannata and M Quagliariello, 'The New Definition of Regulatory Capital' in L Meneau and E Sabatini, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 77-78.
[666] Ibid 79.
[667] Ibid 78.
[668] By increasing the level of capital required under Tier 1 to 6 percent, a bank should, in theory, be better equipped as the quality of capital held under Tier 1 compared to Tier 2 is far superior.

The key strength of a more simplified structure is that the focus of capital became more aligned and focused on producing a more robust guideline for allocating capital. Previously the 8 percent minimum capital to RWA ratio could be split equally between Tier 1 and 2 capital and this was not good for banking regulation. It did not make sense as Tier 1 capital is more important when it comes to core capital, this is because Tier 2 capital operates for different purposes. By reducing the percentage in Tier 2 capital from 4 percent to 2 percent and scrapping the upper limit stated in Basel II, thus allocating more percentage to Tier 1 capital (6 percent of which 4.5 percent must be CET1), this means that the Basel regulations have become more powerful and in turn invigorated the capital to RWA protocol.

Secondly, the quality of capital stated under Basel III increased and provided a more strict definition of capital. Eligibility criteria were revised and the list of items to be deducted are solely from Tier 1 capital. Additionally, they have been rigorously assessed.[669]

The quality of capital has been briefly highlighted in part throughout this chapter, as well as the aforesaid simplified structure surrounding the refined definition of capital and the obsolete equal split between Tier 1 and 2 capital that once existed, therefore, these areas will not be

[669] F Cannata and M Quagliariello, 'The New Definition of Regulatory Capital' in L Meneau and E Sabatini, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 77.

discussed further. Needless to say that it falls under the changes made to quality of capital. What will be explained are some of the parts of the eligibility criteria that have been revised which improve and strengthen the Basel regulations making it a clear strength and much needed improvement from Basel II and by doing so Meneau and Sabatini believe that it provides a more rigorous regulatory capital definition. Alterations include CET1, additional Tier 1 capital, and Tier 2 capital.

CET1 has been designed so that certain criteria must be met for banks to then allocate funds. The criteria devised endeavours to replicate common shares which is the most highest quality of capital and is the best form of capital for loss absorbing; it has been defined as the purest form of capital.[670] There are fourteen criteria that have been concocted and all link in some way to strengthen CET1.[671] For example, under criteria eight, CET1 must be able to absorb losses whilst allowing a bank to continue its activities. Equally as important and interlocking with criteria eight, is the quality of lasting stated in criteria three. This means that those instruments under CET1 must not be repaid outside liquidation and by doing so this will not force a bank to raise new capital in stressed conditions. This means that instruments must be perpetual.

[670] Douglas J Elliott, 'A Primer on Bank Capital' http://www.brookings.edu/~/media/research/files/papers/2010/1/29-capital-elliott/0129_capital_primer_elliott.pdf page 3 accessed 14 January 2016.
[671] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 14-15 accessed 10 December 2015.

Additional Tier 1 capital, like CET1, has fourteen eligibility criteria and has been tightened under Basel III to become much more detailed than before.[672] The impetus has largely come from the eradication of the term innovation and hybrid instruments,[673] the latter did not operate as intended and did very little by way of loss absorbing.[674] By removing the terms innovation and non-innovation means that the weaknesses of such have been tackled i.e. no more incentives to redeem (criteria four).[675] Taking away this incentive enables a bank to be more efficient and to be less inclined to make the wrong decision. Additionally, two improvements have been made in the form of prohibition of dividend pushers and payment in kind of coupons. The former meaning if a payment of a coupon is made it triggers part of the instrument which then triggers a senior part of the same instrument. The latter meaning the payment of shares rather than cash. Furthermore and linking to CET1, is the idea behind perpetually (criteria four) and that additional capital should also provide a strong capital base, additionally dated instruments should not be in force unless a minimum five years is adhered to and that it is at the sole initiative of the issuer with the approval of the regulatory supervisor (criteria five).[676] This means that dated instruments will no longer be

[672] Ibid page 15-17.
[673] F Cannata and M Quagliariello, 'The New Definition of Regulatory Capital' in L Meneau and E Sabatini, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 87.
[674] Stefan Walter, 'Basel III: Stronger Banks and a More Resilient Financial System' http://www.bis.org/speeches/sp110406.pdf page 3 accessed 10 December 2015.
[675] Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ/bcbs189_dec2010.pdf page 15 accessed 10 December 2015.
[676] Ibid page 15-16.

valid unless the aforesaid criteria is met. The restrictions made have produced a key strength in limiting this form of abuse and by eradicating the ability to redeem means that the quality of capital has been further strengthened.

Tier 2 capital operates in a gone concern situation so that when banks enter into a liquidation process, the bank should be able to absorb loss through Tier 2 capital. Like CET1 and additional Tier 1 capital, Tier 2 capital has been reinforced and (again) the Basel Committee have removed the incentive to redeem. The nine criteria points stated are illustrated by the Basel Committee which show how a bank should adopt Tier 2 capital.[677] From a loss absorbent position, which like Tier 1 capital is poignant, Tier 2 capital is only concerned with depositors and senior creditors. Therefore, five years must pass before the instrument can be repaid (criteria four). This is to support a bank in times of stress and, crucially, the Basel Committee stipulate that Tier 2 capital is in place to absorb losses up to the point whereby a bank may no longer be able to operate.[678] This would then limit the impact on tax payers i.e. a public bailout.

The strength of Tier 2 capital is through the idea and philosophy that underpins it, it grapples with stress related incidents and tries to stop or limit the impact on a bank and it also tries to stop or limit the impact that

[677] Ibid page 18-19.
[678] Ibid page 18 accessed 19 April 2018.

it may have on taxpayers. A key strength within the revised quality of capital.

The three improvements of quality of capital resonate a deep feeling that the Basel Committee have really pushed capital forward with the enhancements made to CET1, additional Tier 1 capital and Tier 2 capital. The overall level of high quality capital has been immensely improved.[679]

Thirdly, the quantity of capital has changed drastically under Basel III. It is clear that the financial crisis put a huge strain on many economies and raised questions around the mechanisms in place to withstand such events. One of those questionable areas was the quantity of capital within a bank to absorb financial loss. The improvements made by Basel III means that higher quantities of capital are now required by banks to absorb losses in future events similar to the recent financial crisis.[680] The key strength of such is very simple, but obviously time consuming in nature when implementing. After all, and as Davies comments, the implementation period has been deferred and it will take time to put in place.[681] That strength is the increase in capital that a bank should now

[679] Bank for International Settlements, 'Implications of Basle III for Capital, Liquidity and Profitability for Banks' https://www.bis.org/review/r120305b.pdf page 4-5 accessed 19 April 2018.
[680] F Cannata and M Quagliariello 'The New Definition of Regulatory Capital' in L Meneau and E Sabatini, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 92.
[681] Howard Davies, 'A Shot of Money' http://www.slate.com/articles/business/project_syndicate/2011/10/basel_iii_should_banks_be_required_to_hold_more_capital_.html accessed 19 April 2018.

hold compared to the previous Basel regulations. It was explained earlier in this chapter that the overall total level of capital to RWA has increased, for many banks this will be a massive leap in required capital and may take a decade to reach[682] hence the 2019 implementation date. Although, for some banks this may not be a problem[683] as they have already begun to increase capital levels in excess of the current minimum. [684] Interestingly, some have commented that it could be increased further and capital charges are too low.[685]

The new percentages required by a bank that are stated in Tier 1 and 2 capital have been illustrated, no further clarification is required other than to say that the reforms made form part of the new quantity of capital that has been carefully considered in the refined definition of capital by the Basel Committee.

The real innovation of quantity of capital are the two new mechanisms created; the conservation capital buffer and countercyclical capital buffer. Both have bolstered the definition of capital and the quantity of capital needed by a bank. The former being mandatory at 2.5 percent and the

[682] M McKee and C Barker, 'Basel III Announced' (2010) 73(Dec) Euro News 6, 7.
[683] PricewaterhouseCoopers, 'The New Basel III Framework: Navigating Changes in Bank Capital Management' https://www.pwc.com/us/en/financial-services/publications/viewpoints/assets/viewpoint-basel-iii.pdf page 26 accessed 24 January 2016.
[684] M McKee and C Barker, 'Basel III Announced' (2010) 73(Dec) Euro News 6, 7.
[685] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 19 citing Hanson and others (2010).

latter being optional at 0-2.5 percent, depending on the regulator who may deem it necessary due to excessive credit growth.

It is clear that the two new capital buffers go hand in hand with the refined definition of capital and that the Basel Committee were of the opinion that not only more overall capital was needed, but two new forms of capital reserve that add to the overall required capital was also essential. With this in mind, consideration will be given to the two additional qualities of quantity of capital.

The conservation capital buffer aims to ensure that banks create this buffer outside periods of stress in the market,[686] this buffer can then aid losses as they occur. As Quagliariello explains, 'The requirement is based on a capital conservation rule linking the ability of banks to distribute profits - dividends, discretionary bonuses and share buybacks - to the distance from the target ratio'.[687] The strength of the conservation capital buffer is that it not only adds another percentage of capital which a bank should allocate funds to, but it also aims to reduce and stop the irresponsibility that some banks were portraying by distributing profits to create an image of financial strength; in some cases this was not true.[688]

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[686] F Cannata and M Quagliariello 'Tools for Mitigating the Procyclicality of Financial Regulation' in M Quagliariello, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 171.
[687] Ibid.
[688] Louise Armitstead, 'RBS Sued for 'Untrue and Misleading' Rights Issue in 2008' *The Telegraph* (London, 28 March 2013) http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/9960080/RBS-sued-for-untrue-and-misleading-rights-issue-in-2008.html accessed 15 November 2017.

Furthermore, it can be reduced in times of stress and void the argument that capital buffers cannot be used as real buffers. This will give banks more flexibility and encourage banks to enhance capital base.[689] Therefore, to further bolster and strengthen the conservation capital buffer there will be limitations in relation to distribution policies.[690] It should be kept in mind and linking back earlier in this chapter to what Matten explained, that whether this buffer will erode in adverse conditions whilst attracting sanctions is yet to be seen but could be a possibility. It is too early to say whether this will be the case, but as of this moment the conservation capital buffer is very much a key strength. Lekatis concurs and believes that the conservation capital buffer will strengthen a bank's ability to withstand future adverse situations.[691]

Unlike the conservation capital buffer, the countercyclical capital buffer is a macro prudential tool which is used when regulators deem necessary that credit growth is far too excessive.[692] The main purpose and strength is to ensure that enough capital is built in good banking times so that protection is provided when the inevitable future losses occur in bad

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[689] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 348.
[690] F Cannata and M Quagliariello 'Tools for Mitigating the Procyclicality of Financial Regulation' in M Quagliariello, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 171.
[691] George Lekatis, 'Basel III: Understanding the Capital Conservation Buffer' http://www.treasury.nl/blog/basel-iii-understanding-the-capital-conservation-buffer/ accessed 19 April 2018.
[692] F Cannata and M Quagliariello 'Tools for Mitigating the Procyclicality of Financial Regulation' in M Quagliariello, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 174.

banking times. Both of the two new mechanisms signal a key strength of Basel III and to the overall capital to RWA element. The biggest strength of this capital buffer is flexibility and that regulators can increase and decrease the percentages required.[693]

In conclusion what can be deduced is that the by-product of refining the definition of regulatory capital has created many strengths which all coexist together harmoniously. The three main strengths discussed as a result of the revised and refined definition of regulatory capital have included a simplified structure, better quality of capital and higher quantity of capital. All three link together as all three are a by-product of the improved definition of regulatory capital. Meneau and Sabatini are of the opinion that Basel III should become a more effective tool to bear banking losses[694] as a result. This is, in the author's opinion, a positive step forward.

What can be extrapolated is that a narrow and tighter approach has been taken to what consists of regulatory capital, the criteria that capital falls under, the increase of percentages now required and the integration between them all. In the author's opinion the overall key strength of Basel III is the improved definition of capital and this includes a simplified structure, better quality of capital, better quantity of capital and the

[693] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 348.
[694] F Cannata and M Quagliariello 'The New Definition of Regulatory Capital' in L Meneau and E Sabatini, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 95.

homogeneity between them all. By producing a better form of capital homogeny, Basel III has become a much stronger form of international guidelines.

Unfortunately, whilst Basel III has many strengths, some of which have been examined, there are weaknesses that have developed. Perez details just some of those weakness from barriers into the sector to reliance on CRAs. Perez is of the opinion that whilst Basel III has improved on some of the deficiencies of Basel I and II, there are still some shortcomings.[695]

Weaknesses

Having discussed some of the key strengths of Basel III it is necessary to consider some of the weaknesses, bearing in mind that capital ratios, CRAs and VaR will not be examined until Chapter 4. These include, but are not limited to, three areas, two of which have carried forward from previous Basel iterations. They are:

- Restructuring of internal risk
- Off balance sheet assets and activities
- Reverberations and countries still recovering from the financial crisis

[695] Saul Perez, 'Must-Know: Basel III's Shortcomings' https://marketrealist.com/2014/09/shortcomings-basel-3-accord accessed 19 April 2018.

The first weakness will apply to how easy it is for a bank to manoeuvre and restructure internal risk so that it appears to have lesser risk and need lower capital requirements. The second weakness links to the first and involves off balance sheet assets and activities and usually means an asset (or debt) or financing activity which does not show up on the balance sheet; a problematic area for the Basel Committee as it was one of the main contributing factors to the financial crisis. The third weakness will consider the problems that still face banks in a European context due to the financial crisis and clash with the 2019 Basel III implementation date.

Firstly, the restructuring of internal risk. In this context the main point to note which was evident and has carried across from Basel II, is that a bank can effectively restructure internal risk quite easily. Needless to say that this behaviour should have been restricted and eradicated entirely to help economic stability, rather than promote and allow the mismanagement and concealment by a bank.

Internal risk can be restructured and this was evident during the financial crisis in the form of Credit Default Swaps[696] (CDS).[697] Meaning that the seller of a CDS will compensate the buyer in the event of a loan default or similar scenario. Some of those casualties included many investments

[696] For example, a buyer of a corporate bond will try to eliminate possible loss with a credit default swap which should, in theory, stop the loss arising from default of the issuer.
[697] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 17-18.

banks, although the one that most will remember is Lehman Brothers which owed around $600 billion, two-thirds being associated with CDS.[698] Whilst the liquidator of Lehman Brothers was able to pay off all debts due[699] it does illustrate the devastating effects of CDS. It should also be noted that CDS can be affected greatly by CRAs[700] and the credit ratings that are given to corporate bonds, for example. Daniels and Jensen identify that CDS can change around the time of an upgrade or downgrade from CRAs. This can happen not only during the event but also just before or after a new rating is given.[701] Daniels and Jensen state, '…credit rating is a significant determinant of both CDS spreads and credit spreads for investment grade issues, and especially for non-investment grade issues'.[702]

Blundell-Wignall and Atkinson[703] provide a scenario of how a bank can effectively find a loophole within Basel III by shifting their (bank) promise and decreasing their capital requirement. For example, bank A buys a corporate bond and pays $1000 to a company for this and in return the

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[698] CFI, 'Credit Default Swap' https://corporatefinanceinstitute.com/resources/knowledge/finance/credit-default-swap-cds/ accessed 19 April 2018.
[699] Private meeting, Professor Andrew Haynes, 11 September 2018 University of Wolverhampton, Wolverhampton.
[700] Kenneth N Daniels and Malene S Jensen, 'The Effect of Credit Ratings on Credit Default Swap Spreads and Credit Spreads' https://www.researchgate.net/publication/228616180_The_Effect_of_Credit_Ratings_on_Credit_Default_Swap_Spreads_and_Credit_Spreads page 14-19 accessed 14 September 2018.
[701] Ibid 17-18.
[702] Ibid 20.
[703] Adrian Blundell-Wignall and Paul Atkinson, 'Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity' http://www.oecd.org/finance/financial-markets/45314422.pdf page 12-13 accessed 20 April 2018 .

company will make yearly coupon payments. Risk weighted at 100 percent (Basel III) bank A will hold 8 percent ($80) on their balance sheet. Bank A can then make a CDS on this bond to bank B and short the bond. Due to bank B having a lower risk of default, bank A will only have to hold $16 (20 percent risk weighting/8 percent Basel III/$1000 bond). In this example the bank has been able to reduce the capital reserve requirements.[704]

Not only is CDS beneficial to restructuring risk and increasing leverage ratio for all practical purposes,[705] it can be very lucrative,[706] but the main point here is that a bank can legitimately restructure internal risk and create lower capital requirements that is required of them. To put this into context, Vause highlighted that at the peak of 2007 the notional amount of CDS was about $60 trillion.[707] An astounding amount and this example fully illustrates the market in which this has grown since the middle 1990s; in 2001 it was $628 billion.[708]

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[704] Ibid, the example can be taken further which shows the process in which banks can reduce their capital requirements.
[705] Adrian Blundell-Wignall and Paul Atkinson, 'Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity' http://www.oecd.org/finance/financial-markets/45314422.pdf page 13 accessed 20 April 2018.
[706] Jesse Drucker and Bob van Boris, 'Wall Street Banks to Settle CDS Lawsuit for $1.87 Billion' http://www.bloomberg.com/news/articles/2015-09-11/wall-street-banks-reach-settlement-on-cds-lawsuit-lawyer-says accessed 6 January 2016.
[707] Bank for International Settlements, 'Counterparty Risk and Contract Volumes in the Credit Default Swap Market' https://www.bis.org/publ/qtrpdf/r_qt1012g.pdf page 59 accessed 19 April 2018.
[708] R W Kolb, 'Regulating Credit Default Swaps' in H B Shadab, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 634.

It should be acknowledged that there has been consultation of closing this loophole,[709] although this has yet to take any real effect. Until this issue is resolved then banks can continue doing business whilst evading the intended effect of Basel III. This means that a chain is created whereby one collapse could trigger other collapses. Consider swapping out for example, as Haynes states, 'When a swap contract is sold it cannot simply have its benefits and obligations passed on in the way that can be done with exchange traded and OTC futures and options. In the case of a swap the parties have an ongoing contractual relationship'.[710] So it would not be easily reversible by company B with company A, meaning company B would have two options; one, that company A are willing to cancel the original contract, or two, that company B will have to find a new counterpart. The second option is most likely, yet company B would still have ongoing obligations and a degree of retained risk. Therefore, it can be seen how a chain can be created and can affect all parties.

The second problem with Basel III is off balance sheet assets and activities[711] (OBS). The true magnitude of OBS did not really come to light until the financial crisis. As will shortly be explained, OBS has been in operation and utilised for many years. It has been discussed and

[709] Brooke Masters, Tracey Alloway and Shahien Nasiripour, 'Banks Face Removal of Capital Loophole' *Financial Times* (London, New York, Washington, 24 March 2013) https://www.ft.com/content/f826e6d8-946c-11e2-9487-00144feabdc0 6 January 2016.
[710] A Haynes, *The Law Relating to International Banking* (Bloomsbury Professional 2010) 244.
[711] Off balance sheet assets and activities are those that do not appear on a bank's balance sheet. This can be assets or debts, for example.

included, albeit to limited levels, since Basel I. However, the financial impact that OBS can cause was not fully appreciated until it was too late on contemplating the financial crisis.[712] It is only now in Basel III that OBS is gaining more inclusion and a prominent role with the third iteration. Thiemann believes that Basel III has been innovative in the way that is addresses OBS with measures such as the liquidity coverage ratio[713] (LCR) and the net stable funding ratio[714] (NSFR), and that the Basel III aims are going in the right direction.[715]

OBS links to the first problem (restructuring internal risk) and is harmful for Basel III. OBS problems have plagued the Basel regulations since Basel I.[716] The beginning of OBS can be traced to commodities trading and derivatives. The first currency swaps started around the 1960s and wider derivatives took a little longer to progress but essentially gained momentum during the 1980s. Chorafas explains:

> '…wider derivatives took some time to gain momentum and, because of its relatively small size when in the early to mid-1980s

[712] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 96.
[713] High quality assets to cover short term obligations.
[714] A mechanism put in place by the Basel Committee so that banks maintain a stable funding profile.
[715] Mathias Thiemann, 'Regulating the Off-Balance Sheet Exposure of Banks' http://www.feps-europe.eu/assets/75a7d5a0-85ba-4954-b39f-48217e5024a1/mpifg-p11-43pdf.pdf page 33-37 accessed 19 April 2018.
[716] Nikolaos Papanikolaou and Christian Wolff, 'The Global Crisis Beyond Banks' Balance Sheets' http://voxeu.org/article/global-crisis-beyond-bank-balance-sheets accessed 22 November 2017.

> banks asked regulators where to write such deals, the answer was 'off-balance sheet'(OBS). This decision introduced a great amount of opacity into deals involving novel financial instruments, and the regulators came to regret it'[717]

It would not be wrong to assume that there would be an effective way of regulating OBS now that Basel III is in force and over two decades have passed. Yet it is still proving a problem after the financial crisis[718] and it is an area so vast and complex that it cannot be fixed quickly. Ciro and Longo are of the opinion that OBS still continue to produce problems for regulators.[719] This is to do with the characterisation of OBS, disclosure and perhaps most importantly the overall regulation.

One of the main problems with OBS is that it does not appear on a bank's balance sheet but is still categorised as assets and liabilities. Even if they are it can be hard for even experts to notice.[720] The repercussion of such is that when assessing the financial health of a bank (by an investor, or a purchaser who is not fully aware of their risk burden)[721] it is difficult to identify and track all assets and liabilities, specifically risks, and this is

[717] D N Chorafas, *Basel III, the Devil and Global Banking* (Palgrave Macmillan 2012) 31.
[718] T Ciro and M Longo, 'The Global Financial Crisis: Causes and Implication for Future Regulation: Part 1.' (2009) 24(12) JIBLR. 599, 603.
[719] Ibid.
[720] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 96.
[721] T Ciro and M Longo, 'The Global Financial Crisis: Causes and Implication for Future Regulation: Part 1.' (2009) 24(12) JIBLR. 599, 603.

because OBS only appears (generally) in the accompanying notes.[722] For example, OBS can become hidden liabilities such as CDOs (see above regarding internal risk restructuring and CDS). In this instance, a CDO may contain debt obligations which can become toxic and can be completely illiquid. The effect this can have will be detrimental, especially for investors whose exposure would be heightened. An example of this can be viewed from the subprime lending that contributed to the financial crisis, risky and toxic products were bundled together and sold on so that a bank could either remove the asset off their balance sheet entirely, or move it to their OBS.[723] Seitz et al. state that some banks made their bottom lines more attractive by moving their liabilities and as a result blur, or disguise the information that investors and regulators would see.[724] Essentially, banks succeeded as leading to the financial crisis OBS was cleverly disguised and the true financial health of a bank, in some instances, was illustrated as strong and healthy.

Another problem with OBS is bank leverage. Historically leverage comes into play through deposited funds or other balance sheet items such as bonds. Additionally, leverage can also be linked to OBS through securitisation and over the counter derivative transactions.[725] What

[722] Investopedia, 'Off Balance Sheet - OBS' https://www.investopedia.com/terms/o/off-balance-sheet-obs.asp accessed 22 November 2017.
[723] N Seitz and others, 'Bank Integrity: The Case of Subprime Lending' (2009) 30(9) Comp. Law. 271, 274.
[724] Ibid.
[725] Nikolaos Papanikolaou and Christian Wolff, 'The Global Crisis Beyond Banks' Balance Sheets' http://voxeu.org/article/global-crisis-beyond-bank-balance-sheets accessed 22 November 2017.

happened prior to the financial crisis included banks building up high amounts of leverage (both on and off balance sheet) and Basel I and II were partly to blame due to the regulatory restrictions at the time, the evidence of such not only comes from regulation but how Basel III has introduced leverage ratio into the iteration to stop the build up of leverage.[726]

Fundamentally, what happened was that at the beginning of the financial crisis banks started to deleverage their positions, i.e. sell their on and off balance sheet assets which in turn would reduce their debt and enable a safe return to better capital levels. Unfortunately, the safe haven of better capital levels was not reached by many as the problem included the following: build up of OBS before financial crisis, a sell off of mainly OBS as financial crisis started, several banks deleveraging at the same time, banks then stop selling which froze the market. Whilst deleveraging can work for one bank and return that bank to safer capital levels, several banks trying to deleverage at the same time can have seismic repercussions.[727] The serious effects that OBS can have on the Basel regulations, which was evident during Basel II and still apparent now with Basel III, can be summed up as the following:

[726] ECB, 'The Impact of the Basel III Leverage Ratio on Risk-Taking and Bank Stability' https://www.ecb.europa.eu/pub/pdf/other/sfafinancialstabilityreview201511.en.pdf page 1 accessed 19 April 2018.
[727] Nikolaos Papanikolaou and Christian Wolff, 'The Global Crisis Beyond Banks' Balance Sheets' http://voxeu.org/article/global-crisis-beyond-bank-balance-sheets see figures 1, 2, 3, 4 accessed 22 November 2017.

'…before the onset of the crisis, banks accumulated leverage both on and, especially, off their balance sheets…banks were able to expand leverage in ways that were previously impossible - by largely relying on new financial products, they managed to extend the short-term funding of their medium- and long-term assets'[728]

The devastating effects of OBS continued after the financial crisis, even with the onset of Basel III. Banks began to sell their bad assets that formed part of their OBS and this destabilised economies further. OBS has been epidemic for the banking community that began with Basel I and II where evidence suggests that the regulations encouraged banks to hide assets and risk through regulatory arbitrage, Capie and Wood note that banks did this to ensure the right amount of economic capital was correct and exceeded the regulatory capital required.[729] This is one of the main factors that led to the financial crisis and has continued with Basel III, although it should be noted that Basel III is in the process of improving this with regulation such as uniform credit conversion factors[730] at 100 percent. Simply put, credit conversion factors, or CCF, converts OBS to credit exposure, although it should be noted that it does not include derivatives. The problem with this improvement is that it

[728] Nikolaos Papanikolaou and Christian Wolff, 'The Global Crisis Beyond Banks' Balance Sheets' http://voxeu.org/article/global-crisis-beyond-bank-balance-sheets accessed 22 November 2017.
[729] Forrest Capie and Geoffrey Wood, 'Do we Need Regulation of Bank Capital?' http://www.iea.org.uk/sites/default/files/publications/files/Do%20we%20need%20regulation%20of%20bank%20capital.pdf page 11 accessed 19 April 2018.
[730] D N Chorafas, *Basel III, the Devil and Global Banking* (Palgrave Macmillan 2012) 117.

affects other areas of finance such as trade finance instruments (including letters of credit) which receive the same treatment as other OBS items.[731] In addition, other improvements such as the new liquidity requirements i.e. LCR and NSFR, do not help OBS much either.[732] Petitjean is of the opinion that OBS, including on balance sheet assets, should be minimised at the earliest opportunity.[733]

The underlying problem with OBS and one which the Basel regulations cannot eradicate, is derivatives. This commodity forms part of OBS and cannot be taken out or excluded. Equally, with Basel III looking to enforce stricter rules in relation to OBS and adding them to on balance sheet activities, it begs the question as to how effective this will be. After all, the rules in place leading to the financial crisis were very strict which led banks to delve into the opaque area of OBS. If the Basel regulations become more stringent[734] then the author believes it will only make matters worse. The future is uncertain, what can be said is that it will take several years for banks to make the relevant changes needed and to have sufficient funds to safeguard OBS. Large economies are only just making the necessary changes (China 2016)[735] to this complex and

[731] G Thieffry, 'Basel III and Commodity Trade Finance: An Update.' (2016) 31(3) JIBLR 124, 127.
[732] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 34.
[733] Ibid.
[734] D N Chorafas, *Basel III, the Devil and Global Banking* (Palgrave Macmillan 2012) 117.
[735] Jiang Xueqing, 'CBRC Warns Banks of Off-Balance-Sheet Activities and Assets' http://www.cbrc.gov.cn/chinese/home/docView/A7842A0DE94049F59953D1D84EDD76A9.html accessed 23 November 2017.

problematic way of operating. This will be an interesting area of development over the coming years and fundamentally, '…companies still want to have more assets and fewer liabilities on their balance sheets'.[736]

Thirdly, the reverberations from the financial crisis that are still being felt by many countries. From a European context, as of 2013 the euro zone was out of recession,[737] however, even though some of the worst hit countries are recession free they are still building and strengthening their economy[738] and there is still a lot of work to be done.

What the third weakness alludes to and means for Basel III, is that due to many countries still recovering from the financial crisis, not only will the implementation date be very demanding for those countries, e.g., Portugal, Spain and Greece where the GDP is slowly rising (although GDP does not always equal growth and other mechanisms should be considered),[739] it also means that national economies may shrink.[740] As

[736] Teresa Pala, 'What Lies Beneath: How Off-Balance Sheet Treatment Can Hide the True Debt Picture' http://legalmca.com/2013/02/08/what-lies-beneath-how-off-balance-sheet-treatment-can-hide-the-true-debt-picture/ accessed 23 November 2017.
[737] Gavin Hewitt, 'Eurozone Officially out of Recession' http://www.bbc.co.uk/news/world-europe-23695877 accessed 6 January 2016.
[738] The Economist, 'Taking Europe's Pulse: European Economy Guide' http://www.economist.com/blogs/graphicdetail/2015/11/taking-europe-s-pulse accessed 6 January 2016.
[739] OECD Observer, 'Is GDP a Satisfactory Measure of Growth?' http://oecdobserver.org/news/archivestory.php/aid/1518/Is_GDP_a_satisfactory_measure_of_growth_.html accessed 19 April 2018.
[740] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 22-23.

Baumgartner explains, '…the introduction of Basel III is simply too early for most of the European countries'.[741]

Combined with the problem of the implementation date and that some countries have already missed key phasing-in parts,[742] for some countries within Europe the full recovery period is not estimated to happen until 2020[743] and if this is the case then it arrives at a pivotal point for Basel III with the date of full implementation scheduled for 2019. The problem that arises is that how can a country that has only just become stable, profitable and fully recovered, be also compliant with Basel III. It is plausible that at some point the implementation date may be delayed further and countries may delay the process of incorporating Basel III into domestic law.[744] Only time will tell to see how Basel III develops and whether a delay in implementation will help countries such as those mentioned. This is the consequence of Basel III being created in a reactive rather than proactive process i.e. publication of Basel III released shortly after the financial crisis that has since lasted for several years for some countries. Typically, a recession (on average) lasts for ten months, but the most current recession has lasted far longer[745] and this

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[741] Ibid 23.
[742] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 433.
[743] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 22-23.
[744] Andrey Biryukov, 'Kremlin Said to Urge Basel III Delay as Economic Crisis Hits' http://www.bloomberg.com/news/articles/2015-09-27/kremlin-said-to-urge-basel-iii-delay-as-economic-crisis-deepens accessed 6 January 2016.
[745] Gerald P Dwyer and James R Lothian, 'The Financial Crisis and Recovery: Why so Slow?' https://www.frbatlanta.org/cenfis/publications/notesfromthevault/1110.aspx accessed 24 January 2016.

could have a huge impact on countries around the world and the future success of Basel III.

In conclusion, the weaknesses considered have been the ease of restructuring internal risk which enable banks to effectively reduce their overall capital requirement; linking to this problem is OBS which allows false readings of financial health; and finally the reverberations that are still being felt by many countries within a European context and the implementation period proving problematic.

CONCLUSION

It can be argued that Basel III is more reactive than proactive due to the events of the financial crisis, although Basel III had been planned several years before. Whilst not revolutionary in the form of an entirely new iteration like Basel I and II, Basel III continued with the work beforehand and developed it further by improving, eradicating and creating many areas. Those focused on were:

- Total capital ratio
- Tier 1 capital
- Tier 2 capital
- Tier 3 capital
- Conservation capital buffer

- Countercyclical capital buffer
- Leverage ratio

The first four points can be merged into total capital ratio now required by a bank and it was stipulated earlier in this chapter that many significant changes took place regarding this area of Basel III. Specifically, a tighter definition of capital, changes to percentages against RWA, the eradication of the upper limit leaving only the lower limit in Tier 2 capital, and the removal of Tier 3 capital entirely.

Moving forward, the Basel Committee created two new capital buffers both of which would fall under Tier 1 capital, thus increasing the capital required against RWA. A leverage ratio was also created but an unrelated area to the aforementioned points.

What this actually meant for the Basel regulations was that Basel III would be more focused on capital and applicable facets[746] and this can be appreciated through the revised tiers, including key changes to percentages and the removal of Tier 3 capital, the creation of two new capital buffers which totalled a potential 5 percent to RWA increase, and a leverage ratio of 3 percent. To surmise, one can conclude that the Basel Committee considered what Basel II had done, both good and bad, then revised, created and eradicated certain points to make the Basel

[746] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf page 1 accessed 20 April 2018.

regulations more robust and aligned to current economic conditions. There are several key strengths that have come from the improvements made. Those focused on were:

- Simplified structure
- Quality of capital
- Quantity of capital

A more simplified structure meant that capital became more aligned and produced a more robust set of guidelines. The three Tiers were re-evaluated, percentages increased, Tier 2 capital refined and Tier 3 capital removed entirely. The great strength that came from these changes was that Basel III became more harmonised and as such a better document to comply with.

The quality of capital also improved to include a tighter definition of capital and the eligibility criteria was made to be more structured and detailed. Main areas of improvement included CET1, additional Tier 1 capital and Tier 2 capital.

The quantity of capital was also structured differently and a bank should now put to one side a range from 10.5 percent to a potential 13 percent against RWA, this includes the arrival of two mechanisms; conservation and countercyclical capital buffers. Effectively this means that a bank should now put more capital in reserve to compensate in times of stress.

As with Basel I and II, Basel III would be no exception to weakness and some of the main issues included:

- Restructuring of internal risk
- Off balance sheet assets and activities
- Reverberations and countries still recovering from the financial crisis

The first weakness surrounding internal risk re-structuring is that banks are still able to do it. The example of CDS was given which explained how a bank can effectively and legitimately decrease its capital requirement by moving round its assets. In a way, this cheats the Basel regulations by exploiting this loophole.

The second weakness linked to the first and the issue of OBS of a bank was explored. It was illustrated how problematic this area of banking can be and, crucially, affect the Basel regulations and how an entity can disguise assets, debts or financing activity.

The third weakness is that there are many countries still feeling the effects of the financial crisis. The example of Europe was given and it was explained that although Europe is out of recession, many countries are still gathering pace at a slow rate when it comes to increasing stability and GDP growth. What this means is that come 2019 many countries will have only just recovered. In the light of this it will be difficult for a country that has just recovered to be able to meet the demands put forward by

Basel III. It may be the case that Basel III is delayed further or countries delay implementing.

Basel III has rectified and addressed many of the concerns and criticisms in Basel II.[747] It is appropriate to suggest that Basel III is on the correct path and will enable a more stable financial system.[748] However, there is still much work to do,[749] some of that work will be discussed in the next chapter.

In conclusion, Basel III is a vast improvement and whilst there are issues, the adoption of Basel III is not a matter of when as it will be implemented with varying domestic adjustment,[750] but the author would state further that it is more a matter of implementation (full) itself across the board so that a level playing field can be achieved. The next chapter will arrive at a pivotal point. Three key weaknesses of Basel III will be examined to support the research title. These three risks have been purposely omitted in the weakness section of Chapter 3, and only briefly highlighted in Chapter 2 (CRAs and VaR) in part. They are capital ratios, CRAs and VaR. These will now be discussed.

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[747] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 435-446.
[748] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 351.
[749] Ibid.
[750] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 446.

CHAPTER 4 - BASEL III RISKS AND SHORTCOMINGS

In Chapter 3 the research considered Basel III in the context of what the third iteration endeavoured to achieve and the significant changes that resulted from its creation. Rather than focusing on the structure of Basel III, it was explained how Basel III continued with the work undertaken during Basel II and propelled it forward by making important changes such as adding new measures. For instance, the countercyclical capital buffer and removing measures no longer needed such as Tier 3 capital.

Some major enhancements included a simplified structure, better quality of capital and better quantity of capital. However, as with previous iterations Basel III did not begin its tenure fault free and this included problems such as restructuring of internal risk and OBS in the form of disguising risky assets. What Chapter 3 illustrated was that Basel III became a much more refined and improved set of regulations that were modified and enhanced, and as a result it became much more superior to Basel II and by de-facto Basel I.

The research now arrives at a pivotal point. A brief history shortly before the Basel regulations began was portrayed, followed by the enactment of Basel I, the major restructuring that took place which led to the creation of Basel II, and the financial crisis which encouraged and arguably brought sooner Basel III which propelled Basel II to greater depths. All

of these milestones in the hope of establishing more competent banking regulation and greater financial stability.

By considering Basel I and II in a timeline fashion, it enabled the research to arrive at Basel III and the current economic time so that the research title could be tackled head on. To reiterate, the primary purpose of the research is to examine the risks and shortcomings of Basel III with specific regard to capital ratios, CRAs and VaR. Some of the Basel III weaknesses were discussed in Chapter 3 but the three aforementioned were omitted as the author of the research believes these to be most detrimental for the current iteration. On this basis, the objective of Chapter 4 is to examine capital ratios, CRAs and VaR in order to support the notion that Basel III still requires alterations and improvements.

Over the coming chapter the emphasis will be on the following three weaknesses that are briefly summarised now.

Capital Ratios - Basel III has seen the most significant changes to date in terms of percentage increases from Basel II. This chapter will focus on the increases made, which for some banks could be both time consuming and precarious in that it may take a long time to achieve the minimum amount now required. Additionally, and more importantly, it may be too costly for banks to implement Basel III. The fact that the Basel Committee still places heavy reliance on capital ratios as the answer to all problems

will also be explored as this poses the problem of focusing too much on capital ratios whilst neglecting other areas.

CRAs - Credit ratings agencies have long been used to determine the financial stability and strength of banks around the world. It will be argued that there still remains a heavy reliance on those companies that perform such tasks, and the ability to do so, and the bearing they have on the banking world. Problems that will be explored include high concentration i.e. there are only three big players in the market, over reliance on CRAs within the Basel regulations, the poor rating process for debt sovereignty, and conflicts of interest between CRAs and clients.

VaR - The third weakness is value-at-risk, a risk calculating tool that has gathered momentum since its late arrival in Basel I. The argument here is that VaR does not capture credit risk or even basic risk in some instances. It is a complex model that inevitably exudes deficiency and this chapter will capture those risks. Consideration will be given to the inability of VaR to calculate in volatile markets, difficulties with complex products, over reliance of VaR by the Basel Committee, VaR being applied incorrectly which can lead to negative results, and the three conventional approaches to calculating VaR.

Before the three weaknesses are explored it is worth noting the following statement by Gottschalk about the negative implications that come from the Basel regulations, '…the rules can affect not only bank performance

or the macro-economy of a country, but also the structure of the banking system and its credit patterns…'. [751] This statement highlights the strictness and rigidness of the Basel regulations. With that in mind, capital ratios will now be discussed.

CAPITAL RATIOS

The capital ratio is a key component of the Basel regulations and has been significantly developed since Basel I. Capital ratio is the key measure in determining the strength of a bank, which is calculated as the ratio of capital to bank assets.[752] The Basel Committee created target ratios that a bank should put to one side in order to protect against financial instability, simply put it is how much a bank should allocate for risky assets. It can be referred to as Basel ratios, BIS ratios, or capital ratio as it has been throughout the research.

It was highlighted and discussed to great lengths the changes made in Basel III in respect of capital ratios and the increases made in percentage levels from Basel II. It was noted that the capital ratio percentage level did not change much between Basel I and II, but significant alteration was conducted for Basel III.

[751] R Gottschalk, *The Basel Capital Accords in Developing Countries: Challenges for Development Finance* (Palgrave Macmillan 2010) 2.
[752] Financial Times, 'Definition of Capital Adequacy Ratio' http://lexicon.ft.com/Term?term=capital-adequacy-ratio accessed 3 March 2016.

The Basel Committee asserted that the changes for banks and higher capital ratios would not mean higher costs, not in the long term at least.[753] This does, however, highlight that in the short term the strenuous task for raising new funds to increase capital levels may be too much for some banks and as Jenkins and Shafer note, some banks will find themselves scrambling to obtain funds whilst Basel III nears the deadline of full implementation.[754]

It appears with Basel III that the Basel Committee have taken the approach of increasing capital ratios, applied Tier 1 and 2 capital modifications, and added new capital ratios i.e. conservation and countercyclical capital buffers. The modifications made and the creation of two buffers have increased capital ratios from 8 percent to a potential 13 percent of capital to risk based assets. The problem here is that this can be a huge increase in funds for some banks in order to remain compliant.

In order to highlight the weaknesses of capital ratios, two aspects will be considered in this section. Firstly, the sharp increase in percentage levels which may be too much for some banks to comply with and cost intensive

[753] Jordi Gual, 'Capital Requirements Under Basel III and Their Impact on the Banking Industry' http://www.caixabankresearch.com/documents/10180/53163/ep07_eng.pdf/b39c4fcf-f72e-4a42-aadb-b1431a3feee8 page 10 accessed 3 March 2016.

[754] Patrick Jenkins and Daniel Shafer, 'Europe's Banks Turn to Capital Raising to Meet Basel III' *Financial Times* (London, 13 May 2013) http://www.ft.com/cms/s/0/4b1e76ce-bbb1-11e2-a4b4-00144feab7de.html#axzz42OtmlFUI accessed 9 March 2016.

even within the timescale set of 2019. For instance, it has already been strenuous for many banks trying to meet the higher demands put forward[755] and this presents a huge problem for many banks. Secondly, it can be argued that the Basel Committee believe that by increasing capital levels then this measure will provide enough safety for when the next financial crisis occurs. This is somewhat incorrect as it is not just about the amount of capital that will support a bank in hard times, other facets exist such as the quality of capital or, and more importantly, the amount of liquidity within a bank. Nonetheless, by focusing heavily on capital ratios it does beg the question of whether too much effort and hope has gone into one area of banking regulation, similar to a silver bullet stopping a future financial crisis. Whilst this may be the case, it should be acknowledged that others have argued the increase is not enough.[756] It can be viewed from Basel II and now Basel III, that banking regulation is no simple task and the regulations are both lengthy and complex. To explain the risk of capital ratios, the two aforementioned points will now be discussed.

Capital Ratios - Too costly and unachievable by 2019

The huge impact for a bank under the new capital regime imposed by Basel III is not only the timeline in which this should be achieved but also

[755] Ibid.
[756] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 435.

the cost i.e. the increase in monies that will be needed in order to comply with the new percentage levels. It was estimated that €200 billion was needed by European banks in order to satisfy the first implementation stage in 2013, and €340 billion for one hundred and forty five of the largest banks worldwide.[757] Bearing in mind that there are more phased-in implementation stages for banks to comply with leading to 2019, it is clear from these figures that the biggest risk of Basel III and capital ratios is the huge capital increase that will be required to comply with the current regulations, including the long term effects on the economy.[758] As will be explained in this section on capital ratios, there are many dimensions that arise from the increase in percentage levels that heighten risk and portray shortcomings.

Furthermore, KPMG note that the higher costs for banks will not only mean raising more funds,[759] but also the side effects such as lower profitability and decreased business operations.[760] To add further fuel to the fire, Gual states, '…even in the long term or in a steady state situation, an increase in capital requirements has an appreciable effect in

[757] World Finance, 'World Finance on Basel III' http://www.basel-iii.worldfinance.com accessed 3 March 2016.
[758] Giovanni Caggiano and Pietro Calice, 'The Macroeconomic Impact of Higher Capital Ratios on African Economies' http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/WPS%20139%20The%20Macroeconomic%20Impact%20of%20Higher%20Capital%20Ratios%20on%20African%20Economies%20%20Nv.pdf page 15 accessed 9 March 2016.
[759] KPMG, 'Basel III: Issues and Implications' http://www.kpmg.com/global/en/issuesandinsights/articlespublications/documents/basell-iii-issues-implications.pdf page 9 accessed 9 March 2016.
[760] Ibid page 4.

terms of increasing the cost of financing a banking institution'.[761] It is evident that these increases will have side effects, the problem here is that they could be more harmful than good. Perhaps more importantly and poignant to the risk raised by capital ratios is the immediate and short term cost of such changes. Gual concurs and states:

> '…it is in the short term…when obtaining new equity on the capital markets can prove particularly costly…in addition to capital shortages, there could be problems of asymmetrical information (adverse selection) that make obtaining funds more difficult or expensive'[762]

There are several facets of risk that come from higher capital ratios. For instance, most banks may now have to reduce lending to the wider public and industry and there may be increased costs.[763] This is due to the fact that before Basel III the capital requirements of a bank were much lower than that which is now required. For example, in a retail banking context this means that in the past banks would have had more funds to lend to the wider public, under Basel III the extra money that a bank would have

[761] Jordi Gual, 'Capital Requirements Under Basel III and Their Impact on the Banking Industry' http://www.caixabankresearch.com/documents/10180/53163/ep07_eng.pdf/b39c4fcf-f72e-4a42-aadb-b1431a3feee8 page 12 accessed 3 March 2016.
[762] Ibid.
[763] World Finance, 'World Finance on Basel III' http://www.basel-iii.worldfinance.com accessed 3 March 2016.

had previously is now being allocated to higher capital requirements.[764] Baumgartner argues that it will be worse for corporate banking where lending to small and medium sized businesses could be severely affected by banks who are not able to lend to fund new projects.[765] The basis for this is that there are high risks associated with lending to small and medium businesses due to the high risk of those businesses defaulting. What this actually means is that if a bank is willing to lend to such a business then more capital is required in order to offset the risks posed by default. The new regulations under Basel III in terms of capital ratio in this scenario is that a bank is now financially inferior compared to Basel II. It is clear how Basel III can stifle and restrict lending, as Baumgartner explains, '…a bank…has to hold more capital reserve and will face higher capital costs'.[766]

Higher capital ratios does not only equate to lending problems, it can also mean lower returns i.e. return on equity[767] (ROE) and may force some banks to reduce their business levels (link to reduce lending) due to decreased levels of equity achievable.[768] This could lead to some banks withdrawing from their operations in some of the countries that are

[764] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 19.
[765] Ibid 20.
[766] Ibid.
[767] The net income returned which is a percentage of shareholder's equity. In essence, it measures profitability.
[768] Norton Rose Fulbright, 'An Introduction to Basel III - Its Consequences for Lending' http://www.nortonrosefulbright.com/knowledge/publications/31077/an-introduction-to-basel-iii-its-consequences-for-lending accessed 3 March 2016.

operated in, due to profitability.[769] As Baumgartner states, 'Due to the increasing capital requirements under Basel III, many banks will face a decreasing Return on Equity (ROE)'.[770] Additionally, Bohme et al. stated that, '…75 percent of the ROE impact across all capital-market businesses…is driven by the new capital requirements for market and counterparty risk…'.[771] The negative impact of this is that if banks are lending less then economies and markets around the world will be negatively affected and growth will be slow or could stagnate. The Basel Committee stated that there will be a low downturn in GDP[772] growth,[773] indicating that by implementing Basel III will not be too costly for banks. Yet the evidence discussed so far suggests otherwise. On a similar note, it should be appreciated that banks should not rush the implementation stage(s) as this could greatly affect GDP to higher levels.[774] Evidently, worldwide GDP growth will be down[775] and this will slow the recovery rate

[769] CAPCO, 'Transformation or Extinction: The Consequences of Basel III for the Banking Industry' http://www.capco.com/uploads/articlefiles/381/file_0_1420721376.pdf page 13 accessed 3 March 2016.
[770] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 18.
[771] Markus Bohme and others, 'Day of Reckoning? New Regulation and its Impact on Capital-Markets Businesses' https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Risk/Working%20papers/29_Day_of_reckoning.ashx page 5 accessed 9 March 2016.
[772] GDP or gross domestic output, measures market value of a country in terms of goods and services produced. Normally this is done yearly or in some case quarterly.
[773] Shearman and Sterling LLP, 'The New Basel III Framework: Implications for Banking Organizations' http://www.shearman.com/~/media/Files/NewsInsights/Publications/2011/03/The-New-Basel-III-Framework-Implications-for-Ban__/Files/View-full-memo-The-New-Basel-III-Framework-Impli__/FileAttachment/FIA033011The_new_Basel_III_framework__Implicatio__.pdf page 17 accessed 9 March 2016.
[774] Ibid.
[775] O Baumgartner, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2013) 20.

for banks and countries still clambering for survival due to recent disastrous financial times.

Timescales also pose a huge problem for capital ratios and with the 2019 deadline now here, it is fair to say that for many banks this will be too soon. There are many factors due to this, but the main risks in the authors opinion are those that have been discussed.

The Basel Committee has set a very demanding timescale that needs to be implemented [776] and with many areas to comply with it seems appropriate to argue that there will be many stragglers who will not be able to implement by 2019. The strain that Basel III is having on banks and countries around the world is clear to be seen. India, for example, is one of those countries where the Reserve Bank of India extended the implementation date to be more in line with the international agreed 2019 period as opposed to an earlier 2018 implementation date that was originally set.[777] Whilst the Reserve Bank of India will still be in line with the 2019 target date, albeit March 2019, there was an initial target of achieving the Basel III requirements earlier in March 2018. This highlights to a certain degree that targets may need to be extended. Further to this,

[776] CAPITA, 'What will be the Challenges of Implementing Basel III?' http://www.capitatransformation.co.uk/markets/documents/what%20will%20be%20the%20challenges%20of%20implementing%20basel%20iii%20nov12.pdf accessed 9 March 2016.

[777] The Hindu Business Line, 'RBI Extends Deadline to Implement Basel III Norms to 2019' *The Hindu Business Line* (Mumbai, 27 March 2014) http://www.thehindubusinessline.com/economy/policy/rbi-extends-deadline-to-implement-basel-iii-norms-to-2019/article5840399.ece accessed 9 March 2016.

and to illustrate the arduous task of implementing by 2019, a recent study emphasised that only a small number of countries that are subject to the new rules actually met the 1 January 2013 first implementation stage,[778] signalling the difficulty that banks are facing to put Basel III in force. It has been argued that one of the reasons for this delay is that Basel III was created via notice and comment procedure,[779] meaning that opinions were sought, time was given for those opinions, then action would be taken based from those opinions. Consequently, the process is slow and has experienced delays.

The difficulty is that the recommended date will still be too soon, especially when the first phase (1 January 2013) was delayed by more than one leading economy.[780] Keeping in mind that 2019 is already an extended implementation date (Basel III was originally set for 2015 full implementation)[781] then it would be unlikely that the Basel Committee will extend further. At present it would still appear that a much later implementation date is required.

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[778] Lianna Brinded, 'Basel III: Less Than Half of Nations Meet Deadline for New Bank Capital Rules' http://www.ibtimes.co.uk/basel-iii-capital-requirements-committee-regulation-420179 accessed 9 March 2016.
[779] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 446.
[780] Moran Zhang, 'EU to Follow US in Delaying the Implementation of Basel III' http://www.ibtimes.com/eu-follow-us-delaying-implementation-basel-iii-903024 accessed 9 March 2016.
[781] Jerin Mathew, '36 European Banks Would Have Failed Stress Test Based on Basel III Norms' http://www.ibtimes.co.uk/36-european-banks-would-have-failed-stress-test-based-basel-iii-norms-1472049 accessed 9 March 2016.

The biggest problem for banks is not only the risks stated throughout this subsection, but also the risk of the unknown in that there are still a lot of measures to be put in place and regulation to implement.[782] Only time will tell to see how realistic and achievable the 2019 date will be.

What can be deduced from the material above is that the risk posed by capital ratios are the costs of adhering to and complying with Basel III, and the demanding nature of capital ratios and that many banks will struggle to implement the regulations set.[783] This could produce several negative implications for banks such as reduced lending, reduced business, withdrawing from business operations in countries that a bank may operate in, and decreased levels of profitability and equity achievable which could mean less trading in the economy and would mean higher costs for retail banking and business banking customers.

In light of what has been discussed, attention should be given to the second problem of capital ratios and in the author's opinion how the Basel Committee appear to have concentrated heavily on higher capital ratios as the saviour of Basel III, and in effect neglected other aspects of banking regulation. It has been a consistent trend since Basel I whereby

[782] ISDA Quarterly, 'The Basel III Timeline' http://www.isda-iq.org/2015/10/16/the-basel-iii-timeline/ accessed 9 March 2019.

[783] Essentially, while the capital levels have increased which run the risk of producing higher costs for banks, it is a necessary revision. Equally, while the implementation date poses risks, some of them stated here, the point being made is that banks will and have found it difficult to fully comply with Basel III. While the costs are arduous, it is a consequence of adhering to the higher capital levels and implementation period that is required under Basel III.

capital has been the sole focus of the Basel Committee, and whilst capital is a paramount part of the Basel regulations it should not be the main factor in making banking regulation and economies around the world robust. The problem that is now faced, unlike Basel I and II, is that Basel III comes at a time when financial stability is needed more than ever before. More scrutiny will now be placed on capital ratios than in the past due to the magnitude of what pre-dated Basel III.

Capital Ratios - Still the sole focus of the Basel regulations

It can be argued that the focal point of Basel III is capital ratios and this can be viewed from a recent paper on Basel III reforms.[784] This is evident through the changes made to Tier 1 and 2 capital, the removal of Tier 3 capital, the introduction of two new capital buffers, and the overall increases in percentage level rising from a minimum 8 percent to a potential 13 percent. The problem is that the Basel Committee have essentially put all their resources into one area and spent the majority of time on capital ratios in the hope and expectation that by increasing capital levels in banks will stop future financial crises. It is easy to comprehend as capital was severely hit during the financial crisis and as Bailey rightly points out, the capital adequacy regime dates back to Basel I.[785] Therefore, it is something that has remained as a key element from

[784] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf page 1 accessed 23 May 2018.
[785] Andrew Bailey, 'The Capital Adequacy of Banks: Today's Issues and What We Have Learned From the Past' https://www.bankofengland.co.uk/-

the creation of Basel I where capital was a huge concern. It would appear there is an over reliance on capital ratios and the main risk that can be extrapolated from this is that what if this new approach is breached? What if a bank that has more capital than it had during the financial crisis is still penetrable by another financial crisis? The answer has already been viewed in the recent financial crisis. With less time spent on other areas of banking regulation, it is highly unlikely that the remainder of the Basel regulations would enable a bank to defend in times of economic turmoil. For example, it was stated, 'Inadequate capital is only one of the problems that can beset a financial institution during a crisis. Some institutions that seemed well positioned when the recent crisis struck suffered not from a lack of capital but from a lack of ready cash - - what bankers refer to as 'liquidity".[786] This is true and it has been recognised that banks need more liquidity,[787] unfortunately it is hard to see how the Basel Committee have rectified this issue as Basel III still focuses on capital ratios of which liquidity plays a small part and has until only recently become a more dominant player. This can be interpreted from

/media/boe/files/speech/2014/the-capital-adequacy-of-banks-todays-issues-and-what-we-have-learned-from-the-past page 2 accessed 23 May 2018.

[786] Christopher Alessi, 'The Basel Committee on Banking Supervision' http://www.cfr.org/banks-and-banking/basel-committee-banking-supervision/p28694 quoting Marc Levison accessed 3 March 2016.

[787] EY, 'Basel III Liquidity Requirements and Implications' http://www.ey.com/GL/en/Industries/Financial-Services/Banking---Capital-Markets/Basel-III-liquidity-requirements-and-implications---Regulatory-rules-operational-and-strategic-implications accessed 3 March 2016.

the 2013 paper on the importance of liquidity and the monitoring tools to aid such.[788]

Furthermore, and to cement the notion that capital ratios will not be the saving grace of Basel III, Acharya also concurs that the Basel regulations (not just Basel III) has focused too much in respect of capital requirements and this has ultimately led to other issues being neglected.[789] The classic example of Bear Stearns[790] bank among others[791] is a prime case in that Bear Stearns was strongly capitalised and deemed to be so by the Federal Reserve,[792] but still failed due to the financial crisis; the universal business model proved too much.

In the example of Bear Stearns, it was a case of having a high amount of mortgage related assets leading to the financial crisis in which the housing market had risen for many years beforehand.[793] The problem was that while Bear Stearns was heavily capitalised, it could not meet the

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[788] Bank for International Settlements, 'Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools' https://www.bis.org/publ/bcbs238.pdf accessed 23 May 2018.
[789] Christopher Alessi, 'The Basel Committee on Banking Supervision' http://www.cfr.org/banks-and-banking/basel-committee-banking-supervision/p28694 quoting Viral V Acharya accessed 3 March 2016.
[790] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 192-196.
[791] CNBC, 'Lehman Brothers Files for Bankruptcy, Scrambles to Sell Key Business' http://www.cnbc.com/id/26708143 accessed 17 March 2016.
[792] Floyd Norris, 'The Regulatory Failure Behind the Bear Stearns Debacle' *New York Times* (New York, 4 April 2008) https://www.nytimes.com/2008/04/04/business/04norris.html accessed 18 June 2018.
[793] Ben McLannahan, 'How Jamie Dimon Came to Rue His Bear Stearns Deal' *Financial Times* (New York, 15 March 2018) https://www.ft.com/content/6e488a94-270a-11e8-b27e-cc62a39d57a0 accessed 14 September 2018.

obligations in place.[794] The problem here, although this was not just limited to Bear Stearns, is that there was the assumption, at least in the United States,[795] that investment banks could always borrow against their securities that were owned.

Many years before the 2008 financial crisis, Bear Stearns adopted the approach of securitisation and repackaging techniques and this was incorporated before many others.[796] Hence, Bear Stearns was one of the first to securitise risky mortgages. This developed into Bear Stearns becoming embroiled in the CDO market around the beginning of 2000.

A major problem for Bear Stearns that would eventually come to pass, was that of all the stages involved in a CDO (structuring, managing and investing), Bear Stearns was a part of it all. The problem here is that when the 2008 financial crisis took hold, this would have huge implications due to the asset management part[797] of the business[798] that created a tightening on liquidity.

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[794] Floyd Norris, 'The Regulatory Failure Behind the Bear Stearns Debacle' *New York Times* (New York, 4 April 2008) https://www.nytimes.com/2008/04/04/business/04norris.html accessed 14 September 2018.
[795] Ibid.
[796] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 192.
[797] The asset management part of Bear Stearns was created in 1985 and developed enormously with fund totalling over $18 billion.
[798] Ibid.

When a collapse of funds began to occur it affected the reputation of Bear Stearns. In the beginning, Bear Stearns tried to sell the risky securities in place, although this only made the matter worse due to it affecting price valuation in combination with illiquid assets. Confidence began to deteriorate, and Bear Stearns tried to allay any fears by giving a collateralised loan of over $3 billion but this did not suffice.[799]

The eventual demise of Bear Stearns came from a run on the bank,[800] those investors feared the worst and pulled assets which is surprising in the sense that in early 2008 stock was around $93 yet by March and the takeover agreement of J.P. Morgan was agreed, stock was at a mere $2.[801]

The case of Bear Stearns was that although it was not the largest bank, it was the most leveraged.[802] It is a prime example that if the business model is not diverse it can lead to devastating effects. The model in place in respect of subprime CDOs showed that performance and survival in terms of effectiveness was paramount.[803]

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[799] Due to a hug loss of funds and CRAs issuing a negative watch on many of Bear Stearns CDOs.
[800] Theodore Butler, 'What Really Happened to Bear Stearns?' http://silverseek.com/commentary/what-really-happened-bear-stearns-12942 accessed 14 September 2018.
[801] Ibid.
[802] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 192.
[803] Ibid 195.

In the end, by concentrating on one area of banking regulation shows that it is detrimental and will lead to many risks even if the capital ratios of Basel III are met. It should be recognised that Basel III has introduced stricter liquidity requirements to alleviate this dependency in recent times and since the quoted paper of 2013 earlier, although, there is still a heavy reliance on capital ratios and monies that should be put aside as a precaution. Therefore, if attention is pinpointed to one area then this could result in missing other issues that need to be considered.

The point being made due to the over reliance of capital ratios is not necessarily the amount now required by a bank as this was discussed in the previous subsection, the point being made is that there is a common belief that by increasing capital requirements, i.e. capital ratios, a bank will be more funded and better placed to withstand a financial crisis. The author of the research does not dispute that banks will be better funded if they are able to reach the targets set by 2019, far from it, the author is stating that there is an over reliance on higher capital ratios and the true effectiveness of what can be achieved. This sole focus is spreading across the world and can be seen by the current EU requirements[804] which go even further by requiring banks to hold even more capital than that stated in Basel III. Thus indicating the narrow standpoint of higher capital requirements equaling stronger banks.

[804] KPMG, 'Basel 4 - Emerging from the Mist?' http://www.kpmg.com/ID/en/IssuesAndInsights/ArticlesPublications/Documents/Basel4-Emerging-from-the-Mist.pdf page 3 accessed 17 March 2016.

From what has been discussed, the author would argue that there is too much focus spent on capital ratios by the Basel Committee and this needs to be addressed otherwise this could prove fatal when the next financial crisis occurs. The issue here is that by accounting for and protecting one area of banking, can result in another area proving to be problematic. Consider the case of Dexia whereby capital levels were good but costly, and it shows as Groen articulates, that supervisors and regulators put too much emphasis on capital ratios.[805] In conclusion Groen states, '…the case of Dexia clearly shows that a high core Tier-1 ratio does not automatically imply that the bank is safer'.[806] In the end the perceived low risk business model used by Dexia in regard to public sector banking, proved fatal.[807]

Unfortunately, it does not appear that the issue of capital ratios as the pinnacle of the Basel regulations and defender of financial crises will change anytime soon. Perhaps another financial crisis will highlight this problem.

[805] Willem P de Groen, 'A Closer Look at Dexia: The Case of the Misleading Capital Ratios' https://www.ceps.eu/system/files/WPdG%20on%20Dexia.pdf accessed 23 May 2018.
[806] Ibid page 3 accessed 18 June 2018.
[807] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 183.

Capital Ratios - Conclusion

From the material discussed it seems that since Basel I there has been a key focus on capital requirements and capital ratios, after all capital adequacy is often described as the central concept in banking regulation.[808] It is understandable why capital ratios would be a key area for the Basel Committee as there is the strong argument that the more a bank has in capital reserve the better equipped a bank will be in a financial crisis. On this basis it is easy to comprehend why the Basel Committee have focused on capital ratios and in recent times have made significant changes and improvements. However, and this leads to the heart of why capital ratios pose such a huge risk, it is all well that a bank has vast amounts of capital to protect and absorb against a financial crisis but it has been evidenced in the last decade that even if a bank is heavily capitalised it does not mean a bank will be safe.[809] This has been most evident in cases such as Bear Stearns, Lehman Brothers and Merrill Lynch.[810] It is clear, being heavily capitalised cannot protect against a seismic shift in the market.

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[808] Eric A Posner, 'How do Bank Regulators Determine Capital Adequacy Requirements?' http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2370&context=law_and_economics page 2 accessed 3 March 2016.

[809] Andrew Clark, 'Bank Chief Blames Rumours and Market Fixers for Bear's Collapse' *The Guardian* (New York, 4 April 2008) http://www.theguardian.com/business/2008/apr/04/bearstearns.creditcrunch accessed 3 March 2016.

[810] Steve Schaefer, 'A Look Back at Bear Stearns, Five Years After its Shotgun Marriage to JPMorgan' http://www.forbes.com/sites/steveschaefer/2013/03/14/a-look-back-at-bear-stearns-five-years-after-its-shotgun-marriage-to-jpmorgan/#7749eb2d7ddc accessed 17 March 2016.

It seems appropriate to ponder why the Basel Committee still allocate so much time and effort to capital ratios especially with the events that unfolded during the financial crisis which illustrated that regardless of high capital levels, banks still falter. There appears to be a fundamental belief that capital adequacy is the central concept of banking regulation and the holy grail of financial stability. As Posner states, 'One of the central concepts in banking regulation is capital adequacy'.[811] It should be remembered that capital adequacy is what a bank should have in reserve according to the capital requirements set i.e. the ratio of a bank's capital to assets; the author would suggest that this ideology needs reassessing and it is thus proposed that attention needs to be focused on liquidity levels. For instance, there are signs that Basel III is introducing better standards for bank liquidity levels.[812] So rather than focusing on minimum capital requirements more emphasis should be on liquidity so that assets can be easily turned into cash in case a bank requires so. What has been most evident over the past few years and since the financial crisis, is that banks did not have enough liquid cash to continue trading and the levels of capital against a bank's RWA was not enough to shield when the financial crisis fully developed. In history, banks have required government assistance or failed because they have had insufficient capital, liquidity or both. The author of the research would

[811] Eric A Posner, 'How do Bank Regulators Determine Capital-Adequacy Requirements' https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=2370&context=law_and_economics page 2 accessed 23 May 2018.

[812] K Kellermann and C Schlag, 'Occupying Risk Weighting: How the Minimum Leverage Ratio Dominated Capital Requirements - A Swiss Example' (2013) 21(4) JFR & C 353, 354.

suggest that capital requirements now set by the Basel Committee are strong, liquidity on the other hand needs improvement i.e. higher minimum requirements.

In the next chapter, Chapter 5, recommendations will be put forward to combat some of the problems detailed in this section and a key focus will be on liquidity levels in order to improve capital ratios.

CREDIT RATING AGENCIES

CRAs[813] have been around for many years and determine whether a company, bank (which will be primarily focused on in this context) or country, is able to meet their obligations in respect of debts and fixed income securities. A definition can be ascertained by the International Organisation of Securities Commissions[814] (IOSCO) in which they state, '…an opinion regarding the creditworthiness of an entity…expressed using an established and defined ranking system…'.[815] In short, 'Credit rating agencies provide investors with objective analyses and independent

[813] The functions and services provided by CRAs can be traced to the early 19th century and were provided by business and financial press, credit reporting agencies (emphasis on reporting) and investment bankers. See H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 375-376 for a succinct description of the aforesaid three.
[814] A body that regulates the world's securities and futures markets. It is a voluntary body.
[815] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 418 quoting IOSC.

assessment of companies and countries that issue such securities'.[816] Essentially what this means is that CRAs evaluate and determine the creditworthiness of those entities.[817]

CRAs are used by three key entities: corporate security issuers, investors and banks.[818] In the context of the research, banks are the predominant entity considered. The Basel Committee has extensively used CRAs since Basel II which began in consultation during the latter years of Basel I. It can be viewed that the rating scales which Basel II possessed closely reflected that of CRAs ratings.[819] In fact, CRAs precede the Basel Committee and regulations. It is the aforementioned that has been intertwined and is one of the ways that the Basel Committee feel the regulations will be better strengthened. The main three: Fitch, Moody's, and Standard and Poor's,[820] were established from the early 1900s[821] and to this day are still the main rating agencies.

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[816] Denise Finney, 'A Brief History of Credit Rating Agencies' http://www.investopedia.com/articles/bonds/09/history-credit-rating-agencies.asp accessed 13 April 2016.
[817] Financial Times, 'Definition of Rating Agencies' http://lexicon.ft.com/Term?term=rating-agencies accessed 13 April 2016.
[818] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 419.
[819] Ibid 420-421.
[820] See H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 389-402 for a detailed discussion on the background of the big three.
[821] Denise Finney, 'A Brief History of Credit Rating Agencies' http://www.investopedia.com/articles/bonds/09/history-credit-rating-agencies.asp accessed 13 April 2016.

Ratings range from AAA being the highest to C or D being the lowest[822] depending on the rating agency.[823] The highest rating indicates the strength and ability to repay a debt, compared with the lowest rating and the likelihood of default. Very few are rated AAA, for example, Microsoft in terms of a company and the United Kingdom in terms of a country have held this status in recent times.[824] There are many that have poor ratings which means that higher interest rates will be given due to an increased probability of default. Therefore, it is clear to see how this relates to the Basel regulations and also how it has developed over time. Additionally, it reflects how imbedded CRAs have become in the Basel regulations.

The key beginning of CRAs and the inclusion in the Basel regulations came toward the end of the 1990s and later years of Basel I.[825] In 1999 the Basel Committee proposed that credit ratings should take a more prominent role and would be promoted and utilised through Basel I in respect of overall capital in banking institutions.[826] It is easy to see why the Basel Committee wanted to incorporate CRAs due to the common

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[822] See H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 75-78 for overview of investment grade ratings.
[823] There are detailed explanations on all three respective rating agency websites explaining rating systems.
[824] Financial Times, 'Definition of Rating Agencies' http://lexicon.ft.com/Term?term=rating-agencies accessed 13 April 2016.
[825] Arturo Estrella and others, 'Credit Ratings and Complimentary Sources of Credit Quality Information' http://www.bis.org/publ/bcbs_wp3.pdf page 1 accessed 13 April 2016.
[826] Ibid.

perception (prior to Enron 2001) that CRAs were sound.[827] This was largely due to an immaculate record and success of rating effectively; Moody's being the only agency in the past twenty years to show an anomaly.[828] It is evident that in light of this positive record CRAs were deemed trustworthy, stable and the value that came from rating effectively was positively accepted.

In theory the whole idea behind CRAs and what they try to accomplish i.e. evaluating creditworthiness, is undoubtedly positive for the banking and finance environment. In the context of the research, if a bank's credit rating is illustrated then better judgment can be made by those involved such as whether to invest or not, whether to loan money or not and so on. It also means that in line with the Basel regulations, those banks that have higher ratings will not have to put as much money aside against risks compared with those banks with lower ratings that inevitably would. Indeed, it is easy to appreciate why the Basel Committee would want to incorporate CRAs. Additionally, the work undertaken on the inclusion of CRAs in the Basel regulations was no small task as explained by Estrella et al. when CRAs began their prominent position endorsed by the Basel Committee.[829]

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[827] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 423.
[828] Ibid 424.
[829] Arturo Estrella and others, 'Credit Ratings and Complimentary Sources of Credit Quality Information' http://www.bis.org/publ/bcbs_wp3.pdf accessed 23 May 2018.

Unfortunately, an over reliance on CRAs and ratings being formulated (some not accurate, see example below) has been detrimental, equally CRAs contributed to the loose lending standards at the time which aided the housing boom,[830] the financial crisis is an indicator of this. For example, Lehman Brothers was still rated A or above by the big three leading up to their collapse in 2009,[831] thus signalling an issue surrounding the rating of banks. If the three largest CRAs in the world can get it wrong and it leads to a distorted picture, then surely the role that ratings play in the Basel regulations needs to be re-evaluated. As Hurst puts it, '…there is widespread agreement that credit rating agencies(CRAs or CRSs) deserve a significant portion of the blame…'.[832]

Whilst it can be argued that the rating of Lehman Brothers was not wrong and was in fact based on current figures and it was the speed of change that affected the crash of Lehman Brothers i.e. events at that time were progressing rapidly and accurate ongoing analysis would have been all but impossible,[833] it is still difficult to justify that the CRAs did not get it wrong.[834] For instance, an argument was put forward by Moody's that the rating given was based on government support that was applied to Bear

[830] D Coskun, 'Credit-Rating Agencies in the Basel II Framework: Why the Standardised Approach is Inadequate for Regulatory Capital Purpose' (2010) 25(4) JIBLR 157, 157.
[831] Shahien Nasiripour, 'Credit Rating Agency Analysts Covering AIG, Lehman Brothers Never Disciplined' http://www.huffingtonpost.com/2009/09/30/credit-rating-agency-anal_n_305587.html accessed 13 April 2016.
[832] T Hurst, 'The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis' (2009) 30(2) Comp Law 61, 61.
[833] Private meeting, Professor Andrew Haynes, 9 May 2018 University of Wolverhampton, Wolverhampton.
[834] See H M Morgan, 'Credit Rating Agencies and Regulatory Reform: The Case of Moody's Investors Services' (2011) 26(8) JIBLR 389, 389.

Stearns earlier that year; this should not be a concrete defence. Nevertheless, there are several reasons why this may be the case such as an over reliance of CRAs and regulation (or lack of) of CRAs. To circumvent this problem the European Commission, for example, in late 2010 invited a consultation on the area of rating agencies and although the consultation period was short it highlighted four concerns that needed to be tackled in order to reform the role that CRAs performed. Whilst developed in a European context, it can be applied outside of Europe. These were:

- Reduction of concentration
- Reduce over reliance
- Enhance the process by which sovereign debt is rated
- Combat conflicts of interest[835]

There are other issues[836] but the four highlighted appear to be the most damaging. It should be noted at this stage that there were concerns surrounding CRAs prior to the financial crisis with criticisms such as CRAs being too slow to adjust ratings, lack of independence, and no accountability (even though CRAs play a huge role in the banking world). Therefore, and to add to the argument put forward that CRAs pose a huge

[835] R Barfield, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 403-404.
[836] Council on Foreign Relations, 'The Credit Rating Controversy' http://www.cfr.org/financial-crises/credit-rating-controversy/p22328 accessed 16 June 2016.

risk to Basel III, the four aforementioned issues that have plagued the Basel regulations from the beginning through to Basel III, will now be considered.

Credit Rating Agencies and high concentration

The three main CRAs: Fitch, Moody's, and Standard and Poor's, control the market. The latter two in recent times own 80 percent of market share around the world.[837] In fact, if all three are combined then 95 percent of the market is covered.[838] This validates the widely accepted notion that the area of credit rating is highly concentrated.

There are many theories[839] why credit rating has become highly concentrated, ranging from investors preferring to have a select few in order to evaluate fewer results, to other theories such as the nature in which agencies have to evaluate many entities in order to cover the market widely.[840] Accordingly, this makes it difficult for smaller CRAs to operate or even be created. In a world where reputation is key, the

[837] F Cannata and M Quagliariello, 'The Discipline of Credit Rating Agencies' in L Girodano, V November and N Susi, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 244.
[838] EUbusiness, 'EU Legislative Proposal on Credit Rating Agencies (CRAs) - guide' http://www.eubusiness.com/topics/finance/credit-rating accessed 13 April 2016.
[839] Also see H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 388.
[840] F Cannata and M Quagliariello, 'The Discipline of Credit Rating Agencies' in L Girodano, V November and N Susi, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 244-245.

aforesaid three are able to continue without any notable competition and the effect of such is that concentration is a byproduct. This can lead to many issues as will be discussed now.

The concentration issue stems from the early 1900s when all three major CRAs were established and an investor pays business model was in place[841] i.e. investors would pay those rating agencies to provide a credit rating. In the 1970s this changed to an issuer pays business model[842] i.e. CRAs will charge issuers for a credit rating. Typically the bond issuer will pay the CRAs and then the rating will be publicly made to investors for free; this is the norm in modern banking times.[843] At present all three major CRAs employ the issuer pays business model and this creates another problem under the auspice of risk posed by CRAs. Namely, those issuing the bonds i.e. banks, will pay huge sums of money to be rated (favourably). In addition, the rating agencies themselves will want to continue business with those banks and in turn this opens the door to those agencies rating higher or maintaining a high rating to conserve business with clientele.[844]

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[841] OECD, 'Competition and Credit Rating Agencies' https://www.oecd.org/competition/sectors/46825342.pdf page 5 accessed 13 April 2016.
[842] Ibid.
[843] Parliament, 'Economic Affairs Committee - Second Report Banking Supervision and Regulation' http://www.publications.parliament.uk/pa/ld200809/ldselect/ldeconaf/101/10109.htm point 155-156 accessed 13 April 2016.
[844] F Cannata and M Quagliariello, 'The Discipline of Credit Rating Agencies' in L Girodano, V November and N Susi, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 246.

In 1975 the United States Securities and Exchange Commission[845] (SEC) implemented the status Nationally Recognised Statistically Rating Organisation[846] (NRSRO), a gold standard which all three major CRAs received. This cemented the big three as the main players in credit rating and in turn this stifled competition and limited those wishing to establish as an alternative rating agency. As Chang comments, 'The NRSRO label is the SEC's stamp of approval and signifies that a ratings agency is credible and reliable'.[847] One of the problems with this label system is that smaller firms cannot gain NRSRO status and this means competition is stifled.

Fitch became the third largest rating agency by 2000 and until 2007 when NRSRO status became closed, it was only those three CRAs that held this status. In 2010 there were eleven known NRSRO CRAs[848] and as of 2016 there were ten.[849] However, it is most evident that only three exist due to the size and longevity of all three.

The status of being recognised as a NRSRO is undoubtedly obvious. As Marston points out, it portrays that if the entity being rated is rated well

[845] An independent agency in the United States. Some of the aims of SEC are to protect investors and maintain fair markets.
[846] A rating agency can apply to SEC for this status. As stated above, it is a gold standard for CRAs.
[847] Rachel Chang, 'Entry Barriers Stifle U.S. Credit Ratings Competition' https://www.reuters.com/article/businesspro-us-usa-ratings-competition-a-idUSTRE55N4VU20090624 accessed 23 May 2018.
[848] OECD, 'Competition and Credit Rating Agencies' https://www.oecd.org/competition/sectors/46825342.pdf page 5 accessed 13 April 2016.
[849] SEC, 'Office of Credit Ratings' https://www.sec.gov/ocr accessed 13 April 2016.

by a NRSRO, then it makes it easier and quicker for those entities to issue bonds etc.,[850] it also exudes confidence in that debts will be paid on time.

It can be appreciated how the big three began, progressed, and continue to be the main three providers of credit rating around the world. This high concentration has festered a huge problem, a problem not only in general terms of rating the creditworthiness of those wanting to be rated. The bigger problem is the incorporation of rating agencies in the Basel regulations and how the Basel Committee has placed much emphasis on this mechanism. This has created a massive risk because if CRAs cannot be completely reliable then change needs to occur. This could be in the form of tighter regulation, less emphasis on CRAs and the role within the Basel regulations, or more competition.

Credit Rating Agencies and over reliance

Since the introduction of CRAs and discussions within the Basel Committee during the late 1990s to include within the Basel regulations, it can be said that there has always been an over reliance placed on CRAs[851] and the positive impact that ratings can have in order to reinforce financial stability. CRAs have become so entrenched in the banking world

[850] Rebecca Marston, 'What is a Rating Agency?' http://www.bbc.co.uk/news/10108284 accessed 13 April 2016.
[851] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 441.

and it is easy to see why they have become so popular.[852] Gavras is right, the idea behind rating an entity to highlight good and bad creditworthiness is desirable and the sizeable business that the big three have carved out is also luring for those that require credit ratings.

The consequences of the huge role that CRAs have played in recent times was demonstrated during the financial crisis with Moody's and Standard and Poor's contributing the most in negative terms.[853] There is no need to explain what happened during this time as this has already been covered, but what should be explained are some of the issues that underpin the over reliance of CRAs as this will illustrate the problematic roots that form CRAs.

One of those issues is hardwiring. What is meant by this is that CRAs have become so involved and heavily incorporated into the banking and finance world that it seems to be common nature for CRAs to be included in most spheres such as regulatory framework and financial contracts,[854] or, and in the context of the research, implemented through the Basel regulations.

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[852] Panayotis Gavras, 'Ratings Game' http://www.imf.org/external/pubs/ft/fandd/2012/03/gavras.htm accessed 14 April 2016.
[853] Rachelle Younglai and Sarah N Lynch, 'Credit Rating Agencies Triggered Financial Crisis, U.S. Congressional Report Finds' http://www.huffingtonpost.com/2011/04/13/credit-rating-agencies-triggered-crisis-report_n_848944.html accessed 12 May 2016.
[854] Pragyan Deb and others, 'Whither the Credit Ratings Industry' https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-paper/2011/whither-the-credit-ratings-industry.pdf page 11 accessed 14 April 2016.

In addition, the impact that SEC had in introducing NRSROs would have contributed to CRAs becoming entrenched in the banking world, especially for the big three.[855] It is obvious that overtime how the big three have become eminent and the NRSRO status further aided this cause.[856] If CRAs are viewed as being so helpful and invaluable then it would seem the obvious choice for the Basel Committee to incorporate them into the Basel regulations. After all, the Basel Committee are trying to enhance financial stability which CRAs should, in an ideal world, contribute too.

It is easy to see why CRAs have become so instrumental and inevitably this was used through the medium of the Basel regulations to help strengthen and promote financial stability. This is partly due to many positive aspects that pre-dated the financial crisis, such as CRAs being trusted and operating independently. Due to this, the market as a whole can become more informed of the creditworthiness of banks and other appropriate entities, and CRAs can signal a future crisis or encourage those banks that have been downgraded to improve and become more financially stable,[857] for example.

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[855] See T Hurst, 'The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis' (2009) 30(2) Comp Law 61, 61.
[856] The NRSRO status, which last for over thirty years, would have also hindered any competition in the market.
[857] Pragyan Deb and others, 'Whither the Credit Ratings Industry' https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-paper/2011/whither-the-credit-ratings-industry.pdf page 4-5 accessed 14 April 2016.

It may be disconcerting to some that one of the main contributors to the financial crisis are still going to be used, and it is not surprising that some commentators in this area have suggested a complete severance of external rating agencies.[858] Furthermore, in the context of CRAs being instrumental some have stated, 'I thought we had moved away from that and I thought no regulator wanted us to effectively do that'.[859] This was referring to CRAs playing such a huge role in the United States subprime mortgage crises. Meaning that if CRAs was one of the contributing factors of the financial crisis, then why is it that CRAs are still being used and in the same manner.

Keeping this in mind, the question that is relevant to ponder here is why would an instrument such as CRAs be used when they have caused many problems around the world and continue to maintain a commanding position in the ratings arena? The answer is simple, CRAs would not be allowed to partake any longer.[860] This being said, it would not be feasible to eradicate CRAs in their entirety as they do serve a purpose and provide many benefits. The author would suggest, however, and as will be put forward in Chapter 5, that a public credit rating agency may alleviate some of the issues.

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[858] Ibid.

[859] Ibid accessed 23 May 2018.

[860] A complete removal of CRAs would be an extreme measure. It may alleviate the issues raised over the years such as questionable financial reports and conflicts of interest resulting in inaccurate ratings, however, the author would not recommend a complete severance.

On reflection, it is not possible to remove CRAs in their entirety. It may be possible to reduce an over reliance placed on CRAs through the Basel Committee, which the author believes could help, however the author also supports the idea of a public credit rating agency.[861] Needless to say that the Basel regulations and the banking world should analyse CRAs and their role in the market place.

Credit Rating Agencies and process which sovereign debt is rated

The third risk of CRAs is the ability to rate sovereign debt correctly (this risk is not new to the banking world). The inability of CRAs to effectively rate sovereign debt has been evidenced before, the 1997 Asian financial crisis[862] being an example. Additionally, Gaillard notes that Moody's did not downgrade any European country between the period of 1999-2008 (or upgrade between 2009-2013 (middle of)).[863] Worryingly, CRAs made several upgrades between 1999-2009[864] which does raise a question on the ability of CRAs to rate effectively and correctly. There was a belief from 1999 that there would be a convergence among European members

[861] There are many reasons why it would not be possible to withdraw CRAs from the banking and financial markets. This can be political, economical, and the fact that CRAs are so embedded in the system. CRAs should not be eradicated but less reliance on them considered.
[862] Norbert Gaillard, 'Credit Rating Agencies and the Eurozone Crisis: What is the Value of Sovereign Ratings?' http://www.voxeu.org/article/credit-rating-agencies-and-eurozone-crisis-what-value-sovereign-ratings accessed 14 April 2016.
[863] Ibid.
[864] Yilmaz Bayar, 'Evaluation of Sovereign Risk Ratings in Consideration of European Sovereign Debt Crisis' https://www.ekf.vsb.cz/export/sites/ekf/rmfr/.content/galerie-dokumentu/2014/sbornik/Bayar.Yilmaz.pdf page 25 accessed 15 November 2017.

due to monetary union[865] and this could be the reason (or one of) as to why no country within Europe was downgraded, including ignorance of political problems, development levels and competition, etc. Another viewing angle would be that CRAs wanted to keep a good relationship with those countries it rated,[866] however this clearly unravelled once the financial crisis unfolded.

The notion of CRAs not rating sovereign debt correctly has been strongly supported, Bayar notes:

> 'It can be easily seen…that the big three CRAs didn't assess the developments in the economies of Eurozone correctly and so they didn't give right sovereign credit ratings on time and later they have made successive unmeasured downgrades in order to compensate the past undone downgrades'[867]

The three major CRAs should have had some inclination that something was going to happen leading up to the financial crisis as all three have been established since the early 1900s and are not new to credit rating protocol. In spite of this, a recent paper articulates how the Basel

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[865] Ibid.
[866] Richard Milne and David Oakley, 'Sovereign Debt: Hard to Credit' *Financial Times* (London, 27 March 2011) https://www.ft.com/content/9e1f1da2-58ac-11e0-9b8a-00144feab49a accessed 15 November 2017.
[867] Yilmaz Bayar, 'Evaluation of Sovereign Risk Ratings in Consideration of European Sovereign Debt Crisis' https://www.ekf.vsb.cz/export/sites/ekf/rmfr/.content/galerie-dokumentu/2014/sbornik/Bayar.Yilmaz.pdf page 30 accessed 15 November 2017.

Committee are still very much in favour of and positively view CRAs, and that overall the announcements they give consist of rich and varied information.[868]

There are many ideas why CRAs are unsuccessful or questionable[869] when rating sovereign debt (some of which have been discussed in a European context above) and perhaps this reason can be applied to why none of the big three detected an imminent threat leading to the financial crisis. In a general context this could be one of two things, too slow to act which was evident in the case of Greece,[870] or that CRAs were being too lenient[871] which could be due to keeping clients happy or preserving business, money and profits. Either way, there is a big risk posed by CRAs not being able to effectively rate sovereign debt in a correct and constructive manner.[872]

Recently one of the three major rating agencies accepted a fine totalling over $1 billion for fuelling the sub-prime mortgage market in the United

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[868] Mahir Binici, Michael Hutchinson and Evan Weicheng Miao, 'Are Credit Rating Agencies Discredited? Measuring Market Price Effects From Agency Sovereign Debt Announcements' https://www.bis.org/publ/work704.pdf page 26 accessed 23 May 2018.
[869] Tom Bawden, 'France Feels the Economic Force of the Credit Rating Agencies' *The Guardian* (London, 12 August 2011) https://www.theguardian.com/business/2011/aug/12/france-economy-credit-rating-agencies accessed 15 November 2017.
[870] Fabian Lindner, 'How Rating Agencies are Aggravating the Euro Crisis' https://www.socialeurope.eu/2012/03/how-rating-agencies-are-aggravating-the-euro-crisis/ accessed 14 April 2016.
[871] Vincent Fernando, 'Europe's New Debt Solution: Create Their Own Ratings Agency That only Gives Friendly Ratings' http://www.businessinsider.com/europe-dosent-trust-rating-agencies-so-they-are-setting-up-their-own-2010-3?IR=T accessed 14 April 2016.
[872] Also see T Hurst, 'The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis' (2009) 30(2) Comp Law 61, 62 slow to react.

States.[873] Signalling not only an acceptance that a rating agency got it wrong but also that there is a problem in this area and CRAs have contributed to the financial crisis.

Keeping this in mind, it is easy to see how the inability to effectively rate the creditworthiness of an entity or product can create a huge problem. In the context of rating sovereign debt, the European example of Greece is a recent case of the impact that CRAs can have if the process of rating creditworthiness is conducted wrong.[874] Greece was still in the midst of a rescue package from the European Central Bank many years after requiring aid. In order to rectify this problem it seems that several options are available and should be considered. Either increase regulation of CRAs which would be out of scope of the Basel Committee being a non authoritative entity, or limit the use or eradicate the use of CRAs in the Basel regulations. This way CRAs should perform better in the former, or less used in the latter.

Credit Rating Agencies and conflicts of interest

The final risk posed by CRAs is conflicts of interest and this largely stems from the issuer pays business model i.e. being paid by the issuer to rate

[873] Policy Review, 'Credit Rating Agencies and Their Credibility Problem' http://www.policyreview.eu/credit-rating-agencies-and-their-credibility-problem/ accessed 14 April 2016.
[874] Julie Creswell and Graham Bowley, 'Ratings Firms Misread Signs of Greek Woes' *New York Times* (New York, 29 November 2011) https://www.nytimes.com/2011/11/30/business/ratings-firms-misread-signs-of-greek-woes.html accessed 23 May 2018.

those securities rather than being paid by investors; which is arguably a friendlier mechanism less prone to abuse. As Reiss rightly points out, '…Their business model was based on serious conflicts of interest, conflicts that should and did undermine the trust that others had in them'.[875] Unfortunately the issuer pays business model is unlikely to change, as Foley points out, because the market for CRAs would shrink.[876]

There are several problems that fall under this risk which are CRAs not wanting to disgruntle their client (issuer), CRAs acting as consultants for the issuer over the structuring and underwriting process, CRAs would more than likely want to continue to do business with the issuer in the future, and CRAs employees being too close to some of those whom they rated.[877] These will be discussed now.[878]

Firstly, CRAs will not want to upset their client by giving them a bad rating because there will be a desire to keep the business relationship going.[879] From a revenue perspective it is comprehendible that CRAs will want to

[875] R W Kolb, 'Rating Agencies' in D J Reiss, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 195.
[876] Stephen Foley, 'Issuer Payment: Model Resistant to Reform' *Financial Times* (London, 14 January 2013) https://www.ft.com/content/5a9d7522-5e3d-11e2-a771-00144feab49a accessed 23 May 2018.
[877] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 425.
[878] There are other issues such as CRAs being involved with structured financial products and then rating those products. See T Hurst, 'The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis' (2009) 30(2) Comp Law 61, 62.
[879] SEC, 'The ABCs of Credit Ratings' https://www.sec.gov/investor/alerts/ib_creditratings.pdf page 3 accessed 16 June 2016.

continue a business relationship with their issuers in order to constantly receive a steady flow of income. The problem here is that at what point does the importance of a business relationship that provides revenue for CRAs pass the need to overtake the importance of providing a trustworthy and correct credit rating for investors to judge entities. It seems that this has been neglected in recent economic times and the financial crisis shows the truth in that money and profit takes precedence over honest and accurate ratings. As Reiss notes, '…the profit motive drove the agencies to recklessly expand the market for their services'.[880] This is the consequence of being paid by the issuer.

Secondly, a conflict arises for CRAs if they are involved in both the structuring and underwriting process for the issuer. A conflict could develop if during the underwriting process the CRAs have to give a lower rating to that which was given during the structuring process. This overlaps somewhat with the first problem and CRAs not wanting to upset their client, however, this should not be of paramount concern when the aim for CRAs is to produce a fair and true rating. Therefore, if CRAs are influenced by their client relationship then this can impact on the final rating. This has been evident on reflection of the financial crisis.[881]

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[880] R W Kolb, 'Rating Agencies' in D J Reiss, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 195.
[881] Morgij Analytics, 'Credit Rating Agencies - Do Their Business Models Need to Change to Resolve Conflicts of Interests?' http://www.morgij.com.au/credit-rating-agencies-do-their-business-models-need-to-change-to-resolve-conflicts-of-interests/ accessed 16 June 2016.

Thirdly, CRAs will want to continue to do business with the issuer and this creates the dilemma in that if a low rating is given then the issuer may not come back and may go elsewhere for rating requirements. As such, CRAs would be incentivised to give higher ratings to keep the issuer happy. Similar to risks one and two, the third problem again links to the notion that CRAs do not want to upset their client by publishing a low rating. Lowry and Reisberg suggest that in order to appease their client it seems that CRAs are more than willing to publish higher ratings in order to keep their clients happy.[882] The repercussion is that rating(s) given may be misleading and overly generous.

Fourthly, it is arguable that some of the CRAs employees were too close to the entities in which they would rate. Goldman Sachs is a prime example whereby SEC investigated and concluded that investors were misled. [883] The problem here was that Goldman Sachs had misled investors into toxic debts involving Paulson & Co., and the construction of collateralised debt known as Abacus 2007 and concealed that Paulson & Co. were in fact with Goldman Sachs betting against Abacus 2007. Goldman Sachs appeared to accept some form of wrongdoing when they issued a statement through their website explaining that marketing material was incomplete and that it should have mentioned the role that

[882] The Economist, 'Credit Where Credit's Due' http://www.economist.com/news/finance-and-economics/21601020-ratings-industry-has-bounced-back-financial-crisis-credit-where accessed 16 June 2016.
[883] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 425.

Paulson & Co. played[884] and agreed to a settlement with SEC in 2010. However, it should be noted that Goldman Sachs denied the allegations put forward by SEC which led to the investigation. Not only does this example illustrate the close relationship issue, it also portrays another side of this risk, being pressurised. The example of Goldman Sachs involved Moody's and Standard and Poor's, both were pressurised into giving Abacus 2007 (amongst other toxic debts) solid credit ratings, these were then sold which resulted in devastating consequences.[885] The emails that were obtained leading to the investigation of Goldman Sachs clearly showed knowledge of what was going on and rather than serving their investors, they served themselves through acts of deception.

To circumvent this problem it would be appropriate that CRAs should be accountable for their actions. The suggestion being that if CRAs have strict rules to adhere to which in turn would punish those that stepped out of line, then the argument would be that CRAs are less likely to commit some of the risks and weaknesses put forward throughout this subsection. Essentially, more accountability could reduce the problem created by conflicts of interest and has been proposed by the European Commission,[886] for example.

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[884] Goldman Sachs, 'Goldman, Sachs & Co Agrees to Settlement with SEC' http://www.goldmansachs.com/media-relations/press-releases/archived/2010/settlement.html accessed 23 May 2018.
[885] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 426.
[886] European Commission, 'Regulating Credit Rating Agencies' https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/regulating-credit-rating-agencies_en accessed 23 May 2018.

Credit Rating Agencies – Conclusion

It has been illustrated why and how CRAs are a huge risk for Basel III and have been since their introduction during the consultation period toward the end of Basel I and the major incorporation in Basel II. This has continued with Basel III and it seems unlikely that CRAs will be used less or relied on to a lesser extent anytime soon. The problem with CRAs is split into many segments and there are numerous reasons that make this area complex. Due to this, this section was further divided into four parts explaining how and why CRAs overall are extremely dangerous for the Basel regulations and banking regulation. Attention was given to high concentration, over reliance, poor sovereign debt rating process, and conflicts of interest.

High concentration was considered and how the market has become saturated and that whilst there are many CRAs in reality only three are used. This gives great power to those agencies. A brief history was explained so that greater understanding of how these three agencies came to be so powerful, whilst also discussing the investor pays business model and issuer pays business model and the problem that the latter creates. The outcome of such is that to alleviate this risk either tighter regulation is needed, there needs to be less emphasis on CRAs, or more competition is required and should be encouraged.

Over reliance was considered and how an over reliance by the Basel Committee has been placed on CRAs and their effectiveness in supporting financial stability. It was explained how CRAs became so involved in the Basel regulations, the impact of this in recent times and the financial crisis, and developments in the banking world that encouraged over reliance through SEC and NRSRO. Since the financial crisis more attention and scrutiny has been placed on CRAs by many leading authorities. Yet it does highlight the problem by having an over reliance on CRAs and what damaging effects this can produce. The recommendations would be to reduce the importance placed on CRAs in future Basel iterations, or an extreme stance would be to not have any reliance on CRAs whatsoever, although this stance is not supported by the author.

The poor sovereign debt rating process was considered which included the process and how this is conducted. The main problem is that CRAs have either rated a sovereign nation incorrectly or were too late to act and change a rating for a sovereign nation. It was considered what type of impact this can have with an example given of a leading rating agency accepting a huge fine, in turn the author believes that this act signalled an acceptance that CRAs not only get it wrong but that there is a massive problem in this area and the value of such ratings. Some of the recommendations that would appear to appease this problem would be regulation, or limit or eradicate the use of CRAs.

Conflicts of interest was considered, taking into account the issuer pays business model that arguably encourages this problem. This risk was further explored into sub areas: CRAs not wanting to disgruntle their issuer, CRAs acting as consultant for both the structuring and underwriting process, CRAs wanting to maintain harmony with their issuer, and employees of CRAs being too close to the entities they rate. These four sub areas were considered individually but all of them lead to conflicts of interests. The main recommendation for conflicts of interests would be to look at regulation in order to rectify this problem.

Overall, it can be appreciated that CRAs are a major risk for the Basel Committee, the Basel regulations and the banking world. There does not appear to be one reason why CRAs pose such a risk, rather that many emanate from CRAs due to this area being so intricate. Emphasis was placed on four problems that came from the European Commission report in 2010 [887] that highlighted the aforesaid. The recommendations suggested by the author (tighter regulation, less emphasis on CRAs, more competition, reduce importance/reliance, limit use/eradicate, more accountability) that resulted from each problem given by the European Commission report will be discussed in Chapter 5.

The last part of this chapter will move onto VaR and how this has and continues to affect the Basel regulations and the banking world.

[887] R Barfield, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 403-404.

VALUE-AT-RISK

This section of Chapter 4 will consider the risks associated with VaR and how they have impacted the economy and proven to be a shortcoming for the Basel regulations. VaR will be discussed in its general capacity rather than delving into the many strands that it now operates.

VaR has many forms whether it be internal rating based models seen in a bank's banking book, VaR and SVaR in a bank's trading book, credit value adjustment VaR[888] (CVA VaR) which covers counterparty risk, or operational VaR[889] (OpVaR) which covers operational risk.[890] Therefore, due to the many areas that VaR covers some of this is out of the scope of the research. It is best to view VaR in its general capacity and that all the models mentioned have some form of actuarial nature that involves sampling empirical data or stating distribution, and then estimating a quantile for that distribution.

It should be noted that this section on VaR will expand on the information discussed in Chapter 2 which was highlighted due to VaR becoming more ingrained and prominent with the announcement of Basel II. Furthermore, VaR was omitted from Chapter 3 because of the extensive

[888] Estimate of further potential unexpected losses and is the market value of risk posed by the counterparty.
[889] As stated, this is in relation to operational risk.
[890] M Choudhry, 'A Review of Value-at-Risk' in M Wong, *Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 148.

discussion that would take place in this chapter and due to the information commented on in Chapter 2.

Before highlighting the weaknesses of VaR, it is wise to discuss the background and how VaR became a dominant force as a leading market risk tool. It should be appreciated from the outset that the Basel regulations use VaR as the de facto risk model to calculate regulatory capital.[891]

It would be useful at this point to recollect the definition of risk to fully appreciate what VaR tries to do. Risk has been described by Choudhry as:

> 'Any transaction or undertaking with an element of uncertainty as to its future outcome carries an element of risk: risk can be thought of as uncertainty…It is useful to define risk in terms of a risk horizon, the point at which an asset will be realised, or turned into cash…All market participants, including spectators, have an horizon…the horizon is the time period relating to the risk being considered'[892]

[891] Ibid.
[892] M Choudhry, *An Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 2-3.

On this basis, and when the horizon has been established which in this context will be ten days set by the Basel Committee, a working definition of risk has been described by Choudhry as, '…the uncertainty of the future total cash value of an investment on the investor's horizon date'.[893] The uncertainties that face those in the financial market (such as banks) would be the volatility of asset returns and the types of risk that banks are usually exposed to would be bond and capital markets. The different types of risk such as market risk, credit risk and liquidity risk have already been discussed, therefore they will not be considered here. As will be highly evident throughout the remainder of this section the difficulty in trying to improve, or in some cases remove VaR, is difficult because it has become the established measure of risk exposure for banks; it has even spread to non-financial institutions.[894] What this means is that VaR has become so widespread that it has intertwined and imbedded itself into banking regulation and economies around the world. It will be explored that this is not necessarily a good thing and has huge implications.

What is Value-at-Risk?

VaR can be defined as, '…the worst loss that might be expected from holding a security or portfolio over a given period of time…given a

[893] Ibid 3.
[894] NYU Stern School of Business, 'Value at Risk (VAR)' http://people.stern.nyu.edu/adamodar/pdfiles/papers/VAR.pdf page 4 accessed 14 July 2016.

specified level of probability'.[895] In general terms this means that one could lose everything of their entire value of the portfolio that is held. It is based on probabilities and as such there is no certainty that can be ascertained from using this risk measuring tool. In actual fact, it reflects a level of confidence which is set beforehand. VaR, simply put, is a risk measuring tool for volatility of a bank trading book. It is a tool used to assess a bank's risk exposure and is used by many, such as traders and risk managers. What can be deduced from this is that VaR has a huge responsibility and task in calculating risk for those entities that use it. This is further promoted by the Basel regulations that encourage the use of VaR. The combination of such is that it is widely used, the problem from this is that VaR can have devastating consequences if the incorrect figure is calculated.

VaR is not a new mechanism when determining risk and was included in Basel I during the late 1990s[896] when the Market Risk Amendment was introduced to help aid banks with their foreign exchange and traded debt securities. To assist this process, VaR was incorporated to allow banks to assess their market risk capital requirements and this was the starting point of how VaR began in Basel I. It became more prominent in Basel II and continued through to Basel III. It can be argued that one of the main risks and shortcomings posed to the Basel regulations began with the

[895] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 239.
[896] Bank for International Settlements, 'History of the Basel Committee' http://www.bis.org/bcbs/history.htm accessed 21 June 2016.

inclusion toward the end of Basel I and it has continued to grow since that point.

Troublingly, there are risks surrounding VaR that have been known for many years yet still this mechanism is used. Perhaps one of the reasons why VaR is still so eminent is that it has operated for many years and has evolved over time, equally it is used by many leading banks. It is easy to appreciate why having one risk measuring tool can be so alluring, as Bray-Stacey articulates, 'I think the idea of having a single risk statistic was alluring for everyone…'.[897] So it is acceptable to appreciate that by having one leading risk calculating tool would be so easy to use and incorporate rather than several. Regulators and industry professionals have tried to improve VaR[898] but there is still room for debate to how effective VaR actually is. As will be shown over the coming subsections VaR contains many risks from the inability to calculate volatile markets to the approaches used to calculate VaR. What this means is that from its first introduction in the late 1990s to recent times, VaR has been a constant problem for the Basel regulations and has done more harm than good.

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[897] Jane Croft, 'Value at Risk: The Danger of Relying too Much on Only One Tool' *Financial Times* (London, 21 March 2011) http://www.ft.com/cms/s/0/79752608-5371-11e0-86e6-00144feab49a.html#axzz4H6rFFB26 quoting Simon Bray-Stacey accessed 12 August 2016.

[898] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 233.

The rise of Value-at-Risk

One of the main approaches to measuring risk before VaR was the Notional Amount Approach. This is where a bank would assess the quantity of their market risk in relation to the trading desk. The main advantage of this approach was its simplicity, for example a risk of £10 million of equity in an oil company could be presented to the board as measures of market risk; a very simplistic approach to take. However, there were serious flaws to this approach such as the inability to recognise that different assets possess different price volatilities, and that it did not differentiate between short and long term positions. It can be ascertained from this that there was a need to have a risk measuring tool that could be effective and stable.

The Nominal Amount Approach was not the only risk measuring tool prior to VaR. There were variations of VaR long before it was coined VaR, such as the Modern Portfolio Theory by Harry Markowitz in 1952[899] in which the mathematics that form the foundation of VaR was created, or the first regulatory measures put in place by SEC in 1980 in which SEC tried to align capital requirements to losses incurred with a confidence level and horizon stated, however, this was termed and described as haircuts[900]

[899] Investopedia, 'Modern Portfolio Theory (MPT)' http://www.investopedia.com/terms/m/modernportfoliotheory.asp accessed 14 July 2016.
[900] The price difference which a market participant buys and sells securities. It is associated with a negative spread with buying and selling securities for example.

and not VaR.[901] A haircut in this context is simply the difference in price between which a broker firm can buy and sell a security.[902]

Essentially, VaR or what everybody knows and defines as VaR, was created in 1994 by the bank J. P. Morgan Investment Bank, when the president at the time, Dennis Weatherstone, asked for a report to be sent at the end of every day (by the employees) regarding the bank's degree of risk combined with an equivalent risk measure.[903] The department that operated within the bank became an important part of J. P. Morgan Investment Bank for focusing and specialising in risk and analysis. It was the risk measure used that the aforementioned bank called RiskMetrics,[904] which is what everybody now knows as VaR and is used around the world by banks. Even though VaR was technically in existence prior to 1994, the birth of VaR as a recognised name was created during the end of 1994. VaR was included in the Basel regulations during the late 1990s and in a wider context VaR has become the standard practice in measuring and reporting market risk. This has further been extended

[901] NYU Stern School of Business, 'Value at Risk (VAR)' http://people.stern.nyu.edu/adamodar/pdfiles/papers/VAR.pdf page 2-4 accessed 14 July 2016.
[902] Investopedia, 'Haircut' http://www.investopedia.com/terms/h/haircut.asp accessed 23 September 2016.
[903] Ioan Trenca, 'The Use in Banks of Value at Risk Method in Market Risk Management' http://anale.feaa.uaic.ro/anale/resurse/16_F12_Trenca.pdf page 186 accessed 14 July 2016.
[904] Glyn A Holton, 'RiskMetrics' https://www.value-at-risk.net/riskmetrics/ accessed 23 May 2018.

and used in relation to credit risk,[905] signifying the far reaching nature of VaR.

It should be accepted that VaR is a very useful tool in measuring risk during normal market conditions. In normal market conditions VaR is accurate in calculating overall market risk.[906] In essence, VaR can capture several key components such as volatility, curve, and basis risk. Therefore, it is easy to see why VaR became so popular. However, in stressed non-stationary times VaR portrays serious limitations and the reason for this is simple compared to the complexity of VaR. The reason is because VaR is based on the assumption that volatilities are stationary. Importantly, this is not the case when volatile markets begin and in turn VaR becomes all but useless. This will be considered in the risks subsection.

In practice VaR gives a probability statement of a portfolio change due to market factors over a period of time. The basis of VaR is that it illustrates how likely or unlikely losses will be rather than a precise figure, and despite the criticism this should always be borne in mind. On this basis most VaR calculations are completed on a short term measurement, in the context of the research this is normally ten days for market risk

[905] Robert J Powell and David E Allen, 'CVaR and Credit Risk Measurement' http://pandora.nla.gov.au/pan/58963/20100702-1718/www.ecu.edu.au/__data/assets/pdf_file/0016/40426/wp0905rp.pdf page 1 accessed 7 July 2016.

[906] The measurement of trading position over a short period of time

measurements stated by regulators[907] and is in relation to a given level of probability (confidence level) of which the Basel Committee stipulate is 99 percent. For example, if a portfolio had a daily VaR of £10 million and a 99 percent confidence level, the daily losses expected from this portfolio would only surpass £10 million one day every one hundred days.

In summary, it can be ascertained that VaR is a risk measuring tool that is used by banks to calculate the probability of their portfolio losing money in the short term, longer horizons can be used but the research will not consider this point. The rise of VaR has been briefly discussed to evidence how VaR began and progressed into mainstream banking and financial regulation. To further understand VaR it should be considered how VaR is calculated to comprehend how it operates and the risks that stem from this model.

What can be deduced at this early stage is that VaR can be a good tool for measuring market risk in stationary economic times, as Rogachev notes this is why it has become the mainstream tool that is used all around the world.[908]

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[907] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 240.
[908] Andrey Rogachev, 'Dynamic Value-at-Risk' http://www.risknet.de/fileadmin/eLibrary/Dynamic-VaR-Rogachev-2002.pdf page 2 accessed 12 August 2016.

Calculating Value-at-Risk

There are two phases to calculate VaR. Firstly, one should calculate the forward distribution of the portfolio, or in other terms the potential money return on the portfolio at the chosen horizon. There are three approaches in which this can be done and these will be discussed shortly. Once this has been calculated it is then plotted on a graph to show the likelihood of losses being incurred.[909] Secondly, a bank should identify the required percentile so that a specific number can be read from this. Once this is complete then VaR can be identified.[910] With this in mind, the Basel Committee introduced a confidence level of 99 percent. Essentially, VaR is the worst case loss at the stipulated 99 percent confidence level.[911] The figure of 99 percent is quite high, as Zimper suggests this could be to do with the high capital charges in place.[912]

When calculating VaR the bank will consider their risks in economical capital terms and regulatory capital terms. Economical capital terms mean what a shareholder should invest (or set aside) to limit the probability of default. Regulatory capital terms equate to the minimum amount of capital stated by the regulator. There is usually a difference

[909] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 241.
[910] The second phase will not be discussed because it is based on the calculations derived from the first phase.
[911] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) page 241.
[912] Alexander Zimper, 'The Minimal Confidence Levels of Basel Capital Regulations' http://www.up.ac.za/media/shared/61/WP/wp_2013_05.zp39417.pdf page 12 accessed 23 May 2018.

between the figures derived from an economical capital figure and regulatory capital figure due to the confidence level and time chosen being different. To put this into context, in some instances a bank might choose a higher percent confidence level to what is imposed by the regulator i.e. 99 percent stipulated by the Basel Committee. A bank may also choose a different time that VaR is calculated over, thus using a one day time of liquid positions or ten day time for illiquid positions. In comparison, the regulator states ten day time slots for any position. Therefore, it is clear to see the differences that occur between economical capital terms and regulatory capital terms.

Generally, one day VaR is used to measure market risk and this is done on a daily basis of the portfolio value(s). In regulatory capital terms this is increased to ten day VaR when reporting regulatory capital requirements; this is more inline with the research due to the Basel regulation requirements.

Before the three approaches that a bank will normally calculate forward distribution are discussed, for clarity the factors that drive volatility and the returns on a portfolio must be considered whether that be trading or investment to appreciate the factors that influence VaR. Once those factors are realised the bank can then generate the forward distribution of that portfolio. Then and only then, can a bank calculate the mean and quantiles to obtain the portfolio VaR. It is important to appreciate that the value of a portfolio is determined and driven by the market changes

that take place and the risk factors will depend on a case by case basis due to the portfolio in question. For example, a stock portfolio will depend on prices of individual stocks that contribute to that portfolio, alternatively a bond portfolio will depend on the degree of granularity against the risk.

It was explained earlier that there are two phases for calculating VaR, to calculate forward distribution and that the bank should identify the required percentile so that a specific number can be read from the calculation. It will now be discussed as to how a bank should create these distributions in order to calculate VaR effectively. This will specifically relate back to an earlier comment regarding the approaches that were stated in the first phase. With this in mind and now referring back to the first phase in calculating VaR stated earlier, attention will be given to the three ways in which the calculation of forward distribution of a portfolio can be derived, also taking into account the market risk factors that have just been discussed. On this basis the bank, specifically the risk analyst or similar person, will need to choose a relevant approach for calculating distribution. These are:

- Analytical Variance/Covariance Approach
- Historical Simulation Approach
- Monte Carlo Simulation Approach

As Farid notes, these approaches are the most conventional forms of calculating distribution and the primary methods for calculating VaR.[913] There are more advanced methods, however the research does not intend to explore VaR to that level but rather the weaknesses of VaR in general and the three aforementioned.

Analytical Variance/Covariance Approach

Under this approach one assumes that all the risk factors and portfolio values are log normal distributed. Log normal distribution is the continuous probability distribution in which the logarithm of random variables is normally distributed.[914] Thus a simpler calculation can be achieved because the first two moments of a normal distribution (mean and variance) are completely characterised. Therefore, the risk analyst can calculate the return distribution by using these two figures from the multivariate distribution of the risk factors concerned and composition of the portfolio being assessed. The formula used can be demanding on the best of minds and with recent criticisms of VaR, one questions as to whether those calculating VaR using this approach are qualified and intellectually able. The Analytical Variance/Covariance Approach also requires the volatility of each risk factor to be extracted from a historical

[913] Jawwad Farid, 'Calculating Value at Risk (VaR): VaR Methods' https://financetrainingcourse.com/education/2010/03/master-class-calculating-value-at-risk-var-var-methods/ accessed 7 July 2016.
[914] Investopedia, 'Log-Normal Distribution' http://www.investopedia.com/terms/l/log-normal-distribution.asp accessed 7 July 2016.

period, therefore historical data from previous investment periods is required.

There are many ways to calculate risk factors under this approach. For example, a historic volatility approach is the simplest, but if a seismic shift in the market takes hold then this can seriously distort volatility over the forecasting period. A more sophisticated approach would be to weight previous data unequally, this will then enable more weight to be given to recent data and allow for a potential seismic shift without affecting volatility.

The author believes that this approach becomes convoluted due to the user being able to adopt further measures in calculating VaR using this approach such as using the generalised autoregressive conditional heteroscedasticity model or the exponentially weighted moving averages model.[915] Both models require, and are based on, the provision that future volatilities can be forecast and predicted from historic price movements. This ideology is open to criticism as both models assume that future price movements based on historic data will be correct. What this means is that this approach is reliant on being able to forecast future volatilities and that the historic data used will be correct. For such an important task there should be more certainty on how an approach to calculating VaR is basing its calculations and the underlying foundations

[915] M Choudhry, *An Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 34.

being based on assumptions. Whilst it would be unfair to state that an approach should guarantee the calculations used, there should be more conviction in the approach.

Another problem is that by allowing further models to operate within this approach only makes it more confusing and stricken with more calculating formulas. One model under this approach would create a simple and coherent mechanism that banks could use to calculate their risk.

Historical Simulation Approach

The second approach for calculating forward distribution is not one that is based on assumptions and in theory is very simple. To apply this approach the risk analyst will use data from the last one to three years of historical data as a minimum to produce purposeful results,[916] but generally longer periods will be used averaging three to five years and more.

The usual scenario when this approach is applied is when analysing VaR of a whole portfolio. On this basis, the risk analyst will consider the changes in relevant market prices and rates over the course of the preceding years. The portfolio being examined is then revalued by applying the changes that would have been noticed from the risk factors

[916] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education, 2014) 250.

observed in the historical data. This will then enable the risk analyst to determine the distribution of the portfolio returns which can be associated to the VaR of the portfolio being derived. There are three steps that are involved in order for this process to be accomplished. Firstly, to select a sample over a period of time of the actual daily risk changes. Secondly, apply those changes to the current value of risk factors reevaluate current portfolio and calculate across all positions. Thirdly, create a histogram of the portfolio values.[917]

It can be said that the real positive of the Historical Simulation Approach is that it uses actual historical returns and data. Included in this data are rare events and in some instances market crashes. Hence, this approach captures non-normal distribution of risk factor returns. As Choudhry explains, 'They capture the dynamic nature of correlations as well as scenarios when the usual correlation relationships break down'.[918] It is a good resampling method and as such, simplicity is the byproduct.[919] These are some of the reasons why the Historical Simulation Approach can be viewed positively,[920] however the fact that this approach relies on past data is also its vulnerability. The main problem with the Historical Simulation Approach is that it relies on, by its very nature, a set of

[917] Ibid 251.
[918] M Choudhry, *An Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 34-35.
[919] Hao Li and others, 'Approaches to VaR' https://web.stanford.edu/class/msande444/2012/MS&E444_2012_Group2a.pdf page 6 accessed 23 May 2018.
[920] FRTB, 'Historical Simulation VaR - Easy Guide' http://frtb.info/historical-simulation-var/ accessed 23 September 2016.

historical data and consequently on the abnormalities of this data. This means that the previous data is presumed reliable and can be used to forecast the future, which is a dangerous thing to predict. As Li et al. purports, 'It is based on the assumption that history is repeating itself'.[921] The problems that emanate from the Historical Simulation Approach will be discussed in more detail shortly.

Monte Carlo Simulation Approach

The third approach that is commonly used is the Monte Carlo Simulation Approach, an approach deemed to be more flexible than the previous two.[922] This approach uses the notion of repeatedly simulating random processes in relation to market prices and rates. What this means is that each simulation gives a predicted value of the portfolio over a period of time. It is believed that if this is conducted several times then a truer picture can be created of the distribution.

Like the Historical Simulation Approach, there are three steps that a risk analyst will need to cover. Firstly, the risk analyst will specify all the relevant risk factors and the dynamics of these risk factors. Secondly, construct price paths using random numbers. Thirdly, to value the portfolio for each path. This process must be completed many times in

[921] Hao Li and others, 'Approaches to VaR' https://web.stanford.edu/class/msande444/2012/MS&E444_2012_Group2a.pdf page 6 accessed 23 May 2018.
[922] M Choudhry, *An Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 35.

order to arrive to what is deemed a true distribution figure of the portfolio return. Similar to the other two approaches, the Monte Carlo Approach with a VaR at the 99 percent confidence level is then calculated at the mean of the first percentile. The strength of this approach is that it is more realistic than the previous two and because of this it is more likely to be accurate and achieve a clearer picture of risk.[923] The main weakness of the Monte Carlo Approach is the heavy and burdensome task due to it being computer intensive.[924] As such, this approach cannot determine large and/or complex portfolios. This will be discussed shortly.

How do banks use Value-at-Risk?

With regard to what has been discussed so far, it can be deduced that banks use all three approaches for calculating risk factors, not necessarily at the same time. There is the suggestion that the Historical Simulation Approach is favoured the most[925] and a recent paper concluded that as of May 2012, 75 percent of large banks were using the Historical

[923] Palisade, 'Monte Carlo Simulation' http://www.palisade.com/risk/monte_carlo_simulation.asp accessed 23 September 2016.
[924] TreasuryToday, 'Value at Risk - Monte Carlo Simulation' http://treasurytoday.com/2002/02/value-at-risk-monte-carlo-simulation accessed 7 July 2016.
[925] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 257.

Simulation Approach[926] and it still seems to be the case purported 2017 by Laurent and Firouzi.[927]

It is easy to comprehend why the Historical Simulation Approach is the most used when calculating VaR because it is quick, fairly reliable, easy to implement and can deal with fat tails[928] due to no distribution assumptions. That being said, just because it is the most often used does not mean it is a competent approach to calculating VaR. Therefore, it would be wise to explore the recommendation suggested by the author and to use several techniques when calculating risk.

Value-at-Risk - Risks overview

It is poignant to being with the comment made in the subsection 'The rise of Value-at-Risk' and that VaR is an extremely useful tool to use when measuring risk in normal market conditions, emphasis on normal,[929] which is most of the time considering that major movements in the

[926] Amit Mehta and others, 'Managing Market Risk: Today and Tomorrow' http://www.mckinsey.com/business-functions/risk/our-insights/managing-market-risk-today-and-tomorrow page 4 accessed 7 July 2016.
[927] Jean-Paul Laurent and Hassan Omidi Firouzi, 'Market Risk and Volatility Weighted Historical Simulation After Basel III' http://laurent.jeanpaul.free.fr/Market%20Risk%20and%20VWHS%20After%20Basel%20III.pdf page 5 accessed 25 May 2018.
[928] Fat tails describe statistical distributions which pertain to the probability of certain events. A fat tail would be one whereby moderate to extreme outcomes are more likely compared with a long tailed, for example, which would not.
[929] M Choudhry, *An Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 30-32.

market are not a regular occurrence.[930] However, there are instances where disaster strikes and volatile market conditions take over. The recent financial crisis is a great example of this, before that was the world markets crisis in 1998 which battered the United States hedge fund Long-Term Capital Management (Long-Term).[931] A key problem with VaR and other risk measuring tools is that most investment banks use them and it is widely perceived that one can predict the future by looking at past volatilities;[932] Long-Term being a prime example.

The failure of Long-Term highlighted two confounding flaws that were evident throughout tenure. A reliance on formulaic model and an overwhelming sense of greed. The collapse of Long-Term is a huge reminder that despite a team of well educated Nobel laureates, PhD qualified, number crunching personnel, all of whom allowed a complex formulaic model to predict and define risk, can still succumb to financial markets. It must be said that for generally perceived intelligent people, the risk models used by Long-Term have been described as, '…unbelievably unintelligent…'.[933] It should be borne in mind and what can only be described as a robotic way to predict risk, that it is not possible to calculate exposure and risk by simply using the formula based model used by Long-Term. That being said, it should be appreciated that

[930] For example, Black Monday or the Dot-com bubble.
[931] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 234.
[932] R Lowenstein, *When Genius Failed* (Fourth Estate 2001) 235.
[933] R S Clarkson, 'Actuarial Insights into the Global Banking Catastrophe' (2009) 17(4) JFRC 381, 392.

the mathematics were perfect and as Haynes puts it, 'It was primarily a failure of common sense…'.[934] Furthermore, '…if they kept increasing the size of the positions they took it could eventually freeze the relevant part of the market when there was a crisis'.[935]

The aura surrounding Long-Term was substantial as most hedge funds are managed by traders and stock brokers; a completely different breed compared to those involved with Long-Term. Whilst the financial downturn that took hold during 1998 was not foreseen (according to risk models alike) it is illogical to conclude that the model in use is correct and a catastrophic event such as 1998 will never happen, or unlikely to happen in hundreds of years. Therefore, it is nonsensical to think that a risk model can assume that one can accurately predict risk exposure for a long period of time. In this case it would seem indefinite and was further amplified by greed. In many ways it would appear that because this formula successfully worked for several years and reaped huge financial rewards, that it would continue to do so. In the end, the sheer arrogance by Long-Term and the belief that the markets would turn around (as they had done in the past and would do so again) actually failed. In 1998 Long-Term did not recover.[936]

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[934] Private meeting, Professor Andrew Haynes, 9 May 2018 University of Wolverhampton, Wolverhampton.
[935] Ibid.
[936] Despite the events of 1998, John Meriwether, the key orchestrater of Long-Term, created a new investment firm in 1999 and successfully raised $250 million to begin trading again, with tighter regulation and prudence of course. Whilst this new company later demised in 2009, see Sam Jones, 'Meriwether's JWM Partners winds down flagship fund' *Financial Times* (London, 8 July 2009) https://www.ft.com/content/21a6bbee-6c00-

When the status quo is affected VaR appears to crumble quickly. There is a very simple answer, VaR is based on normal market conditions, volatilities and correlations that are stationary and do not change in value during this period of risk measurement. On this basis it would seem appropriate for a bank to use several risk measuring tools than to focus and rely on VaR alone. During the financial crisis there were many volatilities which VaR was unable to account for.[937]

The risks of VaR do not stop here, VaR also struggles with non-linearities seen in more complex products such as subprime CDOs. It will be discussed shortly how this affected the housing market when the financial crisis first began in the United States.

VaR also suffers from and has the tendency to be over relied on. The result of doing so and the notion that if most banks are using this mechanism is that it inevitably exacerbates market volatility, thus making the market more unstable and creating a weak market in which future

11de-9320-00144feabdc0 accessed 16 November 2016, it shows a worrying picture in that despite the huge losses of Long-Term which totalled billions of dollars, the lead figure of Long-Term was able to set up a new investment firm so easily and quickly after the 1998 disaster. Somehow John Meriwether went on to start a third investment firm. See Helia Ebrahimi, 'LTCM founder John Meriwether returns with third fund' *The Telegraph* (London, 5 October 2010) http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/8042233/LTCM-founder-John-Meriwether-returns-with-third-fund.html accessed 16 November 2016 His tenacity is admirable, but not excusable. Regulation should be in place to stop this from happening. [This is more to do with financial and compliance regulation, however, there are lessons to be learned from this that can be applied to capital regulation].

[937] A Burchi, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284, 294.

transactions are going to be affected by the mechanism that is supposed to protect it.

Another risk is that VaR can be applied incorrectly and interpreted wrongly. Whether by accident or intentionally to suppress risk numbers, the end product can be devastating considering the magnitude of this process.

Finally, the risks posed by the three approaches to calculate distribution i.e. Analytical Variance/Covariance Approach, Historical Simulation Approach, and the Monte Carlo Simulation Approach all pose some form of risk. These will be looked at in turn shortly.

In summary, some of the main risks that come from VaR are the following:

- Inability to cope with volatile market
- Struggles with complex products
- Over reliance of VaR
- Applied incorrectly
- Analytical Variance/Covariance Approach
- Historical Simulation Approach
- Monte Carlo Simulation Approach

These are some of the main risks posed by VaR and in turn have big consequences for the economy, the banking environment and the Basel regulations.

Value-at-Risk - Inability to cope with volatile markets

The author would stipulate that the inability to cope with volatile markets is enshrined in the VaR methodology and it has been most evident in recent times that VaR provided very limited support to what has been the most disastrous financial crises in modern history; in the United Kingdom, for example, this was cited as the worst recession in one hundred years.[938] The problem is simple, the approaches and models used are based on market conditions remaining stationary. As Crouhy et al. state, 'Prices and values are assumed to have a "smooth" behaviour that excludes the possibility of jumps and other extreme events'.[939] The author proposes that the failing of only calculating in stationary times has made VaR redundant in that if a bank is only going to use VaR in its general capacity i.e. not use any other model such as SVaR, then there is no point in calculating risk as there is a high chance that the results will be inaccurate.

[938] Nigel Morris and Sean O'Grady, 'This is the Worst Recession for Over 100 years' *The Independent* (London, 10 February 2009) https://www.independent.co.uk/news/uk/politics/this-is-the-worst-recession-for-over-100-years-1605367.html accessed 25 May 2018.
[939] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 262.

In addition, the events that unfolded from the United States hedge fund Long-Term and the financial crisis several years later are two high profile examples of the inability of VaR to predict market risks. What normally happens at this point, as did in these two events, was a drying up of liquidity combined with trading losses. What needs to occur is a broader approach to calculate risk. The only way for this to happen is for several models to be used so that a more in depth calculation can be derived. The advantages of using several models such as stress tests and scenario based analysis is straightforward and logical. By using different models it will benefit the calculating risk process in that all models have limitations and strengths, therefore the combination of one model that may be limited in one area could be appeased by another model which is stronger in that one area.[940]

Value-at-Risk - Struggles with complex products

Leading from the risk of VaR and its limitation of volatile markets is the argument that complex products such as subprime CDOs are not well captured by VaR. As Crouhy et al. comment, 'The subprime crisis highlighted, in a cruel way, the problem of making assumptions about correlations and assuming that return distributions are stationary'.[941]

[940] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.
Whilst Professor Choudhry agreed that more that one approach could be used, he was of the opinion that it would not make much difference in that it would still provide a rough estimate.
[941] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 543.

Again, this is a problem stemming from VaR not being capable to calculate in volatile markets, in this instance it is the inability of VaR to capture non-linearities in complex products such as the aforementioned, which again has been evident in the recent financial crisis and can only be circumvented by using several models. The difficulty with subprime CDOs and the complex nature which poses a problem for VaR is that during a financial crisis, correlations move either way. In general, risk factors will follow this trend and this will, or can, create a sudden spike in risk i.e. non-linearity. Delving into this area further will illustrate the major weakness that VaR has in relation to CDOs. Let us briefly consider this point now.

In most cases CDOs are highly leveraged products consisting of several tranches, the performance of each is crucial and will depend on the capital structure of the CDO;[942] it will also depend on the amount of any realised credit losses. Due to various complexities there are several structural features that create non-linearities in performance and combined with the fact that potential loss amounts are difficult to predict and estimate, makes it a hard task to calculate. Taking this concept into the area of subprime CDOs the dangers are evident,[943] and VaR is not up to task to estimate an accurate risk figure. In subprime CDOs collateral consists of

[942] Ibid.

[943] See R W Kolb, 'The Origins of the Financial Crisis' in M N Baily, R E Litan and M S Johnson, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 81 CDOs issuers persuaded CRAs to rate senior tranches AAA. This, no doubt, created a huge problem leading to the financial crisis.

subprime bonds that form tranches of pools of individual mortgages. A typical subprime CDO will comprise around one hundred subprime bonds with ratings ranging from AA to BB, an average rating for these CDOs being BBB rated.[944] During the financial crisis there was a downturn in the housing market and the recession that followed portrayed a loss correlation that affected most BBB rated tranches of subprime CDOs. This meant that if one BBB tranche was affected then most tranches of the same rating were also affected. As a result, most subprime bonds became unsaleable and rollover bond issues did not have a market. In reality this meant that banks and investors either did not suffer any financial losses or (and in most cases) they did suffer financial losses due to investments being wiped out.[945]

The risk with VaR and complex products such as subprime CDOs, is that the VaR tool for measuring risk is not sophisticated and flexible enough to estimate the risk(s) associated with CDOs. The example explained about subprime CDOs illustrates this major flaw and that it is hard to estimate the parameters for which the amount of losses can be ascertained i.e. cumulative default rate of mortgages and loss given default to name but two. Due to the nature of this area and that these parameters are not stable due to the economic environment, VaR cannot cope with this type of risk. Similar to the first risk it would be appropriate

[944] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 544.
[945] Dan Wang, 'Collateralized Debt Obligations and Credit Default Swaps' http://danwang.co/collateralized-debt-obligations-and-credit-default-swaps/ accessed 2 October 2016.

to apply several models to limit the struggles that banks have when calculating and using complex models.

Value-at-Risk - Over reliance

Continuing with the theme of using several models for calculating risk comes the problem of VaR being over relied on.[946] Aziz notes, 'Prior to the crisis, there was an over-reliance on VaR. It has almost become a silver bullet for measuring risk'.[947] Thus illuminating the culture that was widespread leading to and during the financial crisis. The problem here is most obvious, by relying on what model for measuring market risk allows for other problems to arise and provides limited flexibility. Over reliance is not a problem limited to VaR but other risk calculating models also. Kennedy said, 'The industry got a host of things wrong and one was the over-reliance on a single measure or set of measures, including VaR'.[948] It can be argued that the Basel Committee, as well as the banking industry, were too late to react in that VaR was being relied on too much and too often. Whether this slow response was due to carelessness or there was a common belief that it would get better in time is hard to say.

[946] Jane Croft, 'Value at Risk: The Danger of Relying too Much on Only One Tool' *Financial Times* (London, 21 March 2011) http://www.ft.com/cms/s/0/79752608-5371-11e0-86e6-00144feab49a.html#axzz4H6rFFB26 accessed 12 August 2016.
[947] Tracy Alloway, 'Modelling: Normal distribution is not Always the Norm' *Financial Times* (London, 13 April 2012) http://www.ft.com/cms/s/0/67d05d30-7e88-11e1-b7e7-00144feab49a.html?siteedition=uk#axzz4HZtJ6Myt quoting Andrew Aziz accessed 17 August 2016.
[948] Jane Croft, 'Value at Risk: The Danger of Relying too Much on Only One Tool' *Financial Times* (London, 21 March 2011) http://www.ft.com/cms/s/0/79752608-5371-11e0-86e6-00144feab49a.html#axzz4H6rFFB26 accessed 12 August 2016.

What is apparent after the financial crisis is that it is a fact that VaR was over relied on and it caused a serious amount of turmoil around the world.

It can be appreciated from the aforementioned comments that it is widely accepted that VaR is over relied on by banks. The weakness here is that if all or most rely on VaR to calculate risk needs, then this can increase and make worse market volatility and in turn have the opposite effect of making markets stable. What this means in reality is that if assets are being sold in this type of market (volatile) then banks are essentially selling assets which can bring prices across the market down and increase volatility. Consequences leading from this are huge as it will depress the market and banks may be forced to exceed their own VaR threshold, this means that assets are sold to reduce this exposure and an endless bad cycle is created i.e. pro-cyclicality. It is most evident that other risk measuring tools need to be included alongside VaR to assist and strengthen this area of banking.

Value-at-Risk - Applied incorrectly

Due to the complexities of VaR it is apparent by its very nature that it is a complex tool to use and apply correctly. What this means is that calculation errors and old data can result in inaccurate reports.[949] The production of any inaccuracies can be problematic for those using this

[949] Barbican Consulting, 'Value at Risk (VAR) Guide' http://www.barbicanconsulting.co.uk/var accessed 12 August 2016.

measuring mechanism and the financial crisis is a true example of this. The results of VaR through incorrect application or by intentional means can have devastating effects and wider repercussions, as will be explored now.

VaR can be applied incorrectly either by mistake or by intentional means. Considering the repercussions of this, the mistake of applying VaR incorrectly can be very detrimental. Equally, the consequences of intentionally applying VaR incorrectly is too, and this has happened in the banking industry where VaR approaches and models are adjusted so that the 'correct' calculation is derived in order for better results,[950] alternatively they can be used to change the outlook from high to low risk. In the London Whale scandal, '…the outsized bets were enabled by the bank's manipulation of its financial controls to downplay risk'.[951] The point being made is that VaR can be manipulated[952] and this can lead to catastrophic results.[953] One of the main consequences of this is that large financial losses amount, J. P. Morgan is a prime example where positions were valued improperly and minimized and reported and projected losses

[950] Michael A Santoro, 'Would Better Regulations Have Prevented the London Whale Trades?' *The New Yorker* (New York, 21 August 2013) https://www.newyorker.com/business/currency/would-better-regulations-have-prevented-the-london-whale-trades accessed 11 April 2018.
[951] Ibid.
[952] Bank for International Settlements, 'Comparative Analyses of Expected Shortfall and Value-at-Risk Under Market Stress' https://www.bis.org/cgfs/conf/mar02p.pdf page 218-219 accessed 11 April 2018.
[953] Lindo Xulu, 'Value at Risk's Apparent Manipulation' http://www.financialmail.co.za/fm/2012/07/24/value-at-risk-s-apparent-manipulation accessed 12 August 2016.

were hidden.[954] The main catalyst for manipulation, the author would argue, is that it was incentivised in order to not only reap huge profits but to make those profits appear low risk.[955] Guldimann described this as asymmetric risk positions i.e. products that generate small gains and have minimal losses yet when they do they are big.[956]

The alarming thought is that even if a bank is using the correct approach i.e. the Historical Simulation Approach, and it is being used to assess an appropriate risk, there still remains a chance that it will be incorrectly implemented[957] where intensive models, for example, may incur a bug in the programming and this can affect the end result. This is normally seen in more complex approaches such as the Monte Carlo Approach in which the highly computer intensive procedure can create many inaccuracies if the simulation is run incorrectly i.e. only a small amount of scenarios have been tested.

It is easy to see that mistakes can happen. A prime example of this was illustrated during the 1970s and Merrill Lynch.[958] During the middle of the 1970s Merrill Lynch started to dissect thirty year government bonds. The investment firm then began to offer the dissected components to the

[954] Steve Schaefer, 'Former JPMorgan Exec Ina Drew Deflects Blame for London Whale Trades' https://www.forbes.com/sites/steveschaefer/2013/03/15/ex-jpmorgan-exec-drew-deflects-blame-for-london-whale-trades/#5fc0c6062d5d accessed 11 April 2018.
[955] Joe Nocera, 'Risk Management' https://www.nytimes.com/2009/01/04/magazine/04risk-t.html accessed 29 June 2018.
[956] Ibid, describing Guldimann's asymmetric risk position.
[957] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 540.
[958] Ibid 542.

market as interest only and principal only instruments. In essence what Merrill Lynch did, incorrectly and by mistake, was apply a par yield formulation to value the instruments rather than the annuity rate formula for the interest only instrument and zero-coupon formula for the principal only instrument. Simply put, Merrill Lynch undervalued the former and overvalued the latter. Merrill Lynch then sold $600 million of the interest only instruments but none of the principal only instruments. The trader(s) involved in this transaction then hedged the thirty year bonds using a thirteen year timescale, which was correct, however, this was dependent on the bonds remaining intact. The second mistake made was to [still] base the bonds on a thirteen year timescale once all bonds were sold when they should have changed the timescale to thirty years. What this meant was that when interest rates began to rise losses began to amount. In summary, Merrill Lynch illustrated two things. One, the over and under valuation of the interest only and principal only instruments. Two, the incorrect timescale (duration) used once all bonds had been sold. Due to these two mistakes, Merrill Lynch incurred a loss of $70 million, thus highlighting one problematic area of VaR and that it is very easy to apply VaR incorrectly, and the repercussion can be costly as seen around the time of the financial crisis.

To limit the problems of incorrect application and manipulation, better training should be sought so that employees calculate correctly, and

tighter regulation and penalties should be in place for those that manipulate the calculation.[959]

Value-at-Risk - Analytical Variance/Covariance Approach

In respect of the three main ways that VaR can be calculated, the first is the Analytical Variance/Covariance Approach.[960] This approach has several noticeable problems. For instance, it assumes normality of a return portfolio, it does not cope well with fat tailed distributions, and it requires predictions on volatility risk factors and the correlations of such returns.[961] These problems point to a reoccurring risk throughout VaR and that is the ability to calculate accurately in volatile markets, of which it is limited.

Let us consider the problems in more detail. This approach is based on normality of a return portfolio, or in other words a log normal distribution. It has been suggested that there is an assumption that most returns are log normally distributed.[962] However, not all returns are and may contain a term called fat tailed distribution.[963] When calculating distributions a

[959] This would, in the author's opinion, reduce manipulation. This point will be discussed in due course.
[960] See M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 84-89 for further analysis.
[961] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 257.
[962] Ibid 249.
[963] A fat tailed distribution is one which exhibits moderately extreme scenarios that happen more likely than not, evidently they represent a bad event occurring more than a long normal distribution.

risk analyst will plot on a graph these distributions which in a log normal distribution will shape in a curved fashion, thus showing the probability and the distribution of results. In a fat tailed distribution the shape will be different and where in a log normal distribution the line tails off quick highlighting the rarity of unlikely events, a fat tailed distribution will remain thick and tail off slowly. Meaning that a fat tailed distribution normally indicates extreme losses that will occur more frequent than a normal distribution.[964] Therefore, if there is an assumption that most returns will be or are log normally distributed then the risks highlighted in a fat tailed distribution will not be seen and warning indicators will not be seen. If the Analytical Variance/Covariance Approach cannot calculate fat tails, alternative mechanisms are needed.

Value-at-Risk - Historical Simulation Approach

The second main approach is the Historical Simulation Approach.[965] The main risk posed by the Historical Simulation Approach leads on from its main advantage and that it is not parametric and for that reason does not rely on setting parameters. However, the problem with this is that this approach will rely on historical data to calculate risk. The absolute dependence on specific historical data and distinctive characteristics can

[964] Financial Times, 'Definition of Fait Tails' http://lexicon.ft.com/Term?term=fat-tails accessed 17 August 2016.
[965] See M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 93-96 for further analysis.

be very damaging. Consequences can be distortion when predicting future events or ignoring the data of a previous market crash.[966]

The drawback when analysing past data is that one assumes it is correct and reliable. What this means is that what once happened it will repeat itself again, and therefore these risks can be calculated on this basis. Yet this may not be the case, whilst a financial crisis may have happened in the past it is too hard to predict when one will happen again. It may also be the case that the data used is too old, even when the data may have been from the last few months.[967] This could be the result of new regulatory rules or new technology, thus producing inaccurate results. Further to this, the Historical Simulation Approach cannot accommodate any changes in the market and a key indicator of this was the introduction of the Euro at the beginning of 1999.[968] As a consequence, the ability to anticipate structural change is mute.

The final risk to note and arguably the worst, is the size of data used. Typically, one year of data will amount to around two hundred and fifty trading days. This means that there are potentially two hundred and fifty scenarios that can be analysed. What this means is that the results are extremely limited and may leave many gaps to be unanswered. Even if a

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966 M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 258.
967 Glyn A Holton, 'Value-at-Risk' https://www.value-at-risk.net/shortcomings-historical-simulation/ accessed 12 August 2016.
968 M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 254.

risk analyst considers the past five years, this will only lead to one thousand two hundred and fifty trading days i.e. scenarios. To put that in context and to highlight the weakness of this approach, the Monte Carlo Approach offers significantly more scenarios mounting to around ten thousand (on average), which is a much stronger return of data[969] compared with the Historical Simulation Approach.

In summary, the huge weakness of the Historical Simulation Approach is that by producing a small sample of scenarios to calculate risk, the occurrence of unlikely events that could lead to devastating results for the economy are underrepresented and not highlighted. This could be supported by using the Monte Carlo Approach in addition as this would provide a bank with more results to measure risk accurately. It should not be forgotten that the Historical Simulation Approach is by far the most commonly used risk measuring tool for VaR and signifies huge popularity.[970] What needs to be done is to look at ways in which the Historical Simulation Approach can be improved and made more robust. This would mean that the benefits of improving would cascade to all those that apply, which from the material discussed is substantial.

[969] Ibid.

[970] Jean-Paul Laurent and Hassan Omidi Firouzi, 'Market Risk and Volatility Weighted Historical Simulation After Basel III' http://laurent.jeanpaul.free.fr/Market%20Risk%20and%20VWHS%20After%20Basel%20III.pdf page 5 accessed 25 May 2018.

Value-at-Risk - Monte Carlo Simulation Approach

The third and final approach used to calculate VaR is the Monte Carlo Simulation Approach.[971] There are two noticeable weaknesses, one which is the ability to calculate the parameter of the distributions, and two, how the Monte Carlo Simulation Approach is extremely computer intensive for most banks to conduct.[972] The former is a problem in that the risk analyst must be able to predict the parameters for distribution which covers areas such as variances and covariances. However, due to the complexity it is arguable to assert that many risk analysts struggle with this calculation and this may lead to incorrect estimates. The latter weakness is also linked with the complexity of this approach and that the computer resources needed are great and whilst this method can calculate many scenarios, it struggles with large and complex portfolios. If this approach cannot calculate large and complex portfolios then there are only two outcomes. One, results will not be accurate. Two, and leading from the first, other models need to be sought in order to compensate for this weakness and to give a more accurate figure.

The best approach is an obvious one, to use all three approaches to gather and compile more reliable and accurate figures for VaR. This also complements a previous recommendation made in that VaR is limited in

[971] See M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 89-92 for further analysis.
[972] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 256.

volatile markets and one should use several risk calculating models and approaches to gain a clearer picture. By doing so, a bank can collate several forms of statistical data which will give a wider perspective of the field.

Value-at-Risk – Conclusion

It is apparent that VaR has many weaknesses from its inability to calculate risk in volatile markets to the three approaches used to calculate VaR. There are shortcomings that cannot be overlooked. What can be deduced from this is that a large task remains in order for VaR to be strengthened and for it to become more flexible, versatile, and accurate in producing risk data and numerical reporting.

VaR is dependent on data surrounding volatilities and correlations and tries to employ a set formula to estimate future risk. VaR endeavours to do this based on stationary market conditions and that prices remain stable and smooth, not taking into account extreme events and possible reverberations. Due to VaR operating in this manner leads to many problems. It would not, therefore, be unfair to say that VaR is an unreliable risk measuring tool, which is exposed during volatile times. The inability to predict future volatility in the market is somewhat of an obvious chink in the armour of this risk measuring tool.

Unfortunately, there is no suitable mechanism that improves VaR in order for it to calculate both normal and volatile market conditions at present. If this can be accomplished along with longer horizons, then a better and stronger platform can be achieved. On this point it is worth stating that the Basel Committee did try to strengthen VaR by incorporating SVaR, and whilst this chapter is solely concerned with risks and shortcomings it would be unfair to not include a brief discussion on this addition (also see Chapter 2). Although, what will be pointed out is that there are weaknesses of SVaR too.

In brief, SVaR is a tool aimed at decreasing the impact of pro-cyclicality. SVaR was introduced in Basel II.5 (see Chapter 2). What this meant was that a bank using internal models would now have to include a further calculation highlighting SVaR. The whole purpose of this and the reason as to why it has been reflected on here, is that the VaR tool that has been used since the adoption in the late 1990s, did not account for volatile market conditions. On this basis, SVaR was introduced to combat this problem and will, in theory, enable a bank to look at periods of stress outside of normal market conditions. As an end result, SVaR can be viewed as more of a stress test result. The way in which SVaR is calculated or recommended to be calculated, is to conduct calculations on a weekly basis by using historical data and regulators expect capital to be held for this process.

Whilst SVaR can be initially interpreted as an improvement to VaR, it is not without fault. This is the second reason as to why it has been mentioned at this point of Chapter 4 and that whilst the Basel Committee have tried to strengthen VaR, there are still risks associated namely, a stressed period calculation must relate to a period of stress a bank has encountered[973] and this can be a massive computational task. Another risk is the structural challenges that present themselves with products that have been introduced after the stressed period calculation and where no historical data is available.[974] Further to this, Cabana identifies that the bank industry opined that by including SVaR in addition to VaR actually double counts risk,[975] additionally it does not incentivise banks to improve their own VaR models.[976] Needless to say that whilst intentions are in the utmost highest, VaR in general (including SVaR) still presents a huge risk for Basel III and banking regulation. The measures put in place since the financial crisis has yet to produce a real solution to this problem. On this note, it is no surprise that many critics have argued for VaR to be abandoned[977] due to the amount of problems that persist. The author of the research would disagree with this argument and assert that VaR still has a place in the banking and financial sector, what needs to be done is for it to be strengthened by evaluating better, as well as

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[973] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 105-106.
[974] Ibid 106.
[975] F Cannata and M Quagliariello, 'A New Framework for the Trading Book' in F Cabana, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 126.
[976] Ibid 128.
[977] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 235.

using other risk calculating tools to compliment VaR i.e. there should not be over reliance. By doing so, the author believes that VaR can still play an important role and assist appropriately through the Basel regulations. A similar stance was stated by Kennedy in which he said, 'The wrong response is to dispense with Var. The right response is to understand it for what it is and supplement it with other information…'.[978] The author would concur with this statement, simply because there are many positives that come from VaR. Also, there is no better alternative to use and it would be ludicrous to remove VaR entirely. It should be acknowledged that VaR is so ingrained in the Basel regulations that to take out VaR altogether would be very difficult and almost impossible due to its inclusion since Basel I.

The general consensus is that Basel III is too fragmented[979] and it is because of this that a new approach should be generated in order to deal with capital adequacy.

To safeguard VaR as the primary risk measuring tool, a combination of models and approaches need to be used for every risk calculation. As Crouhy et al. stipulate, 'The many different dimensions of risk require a

[978] Jane Croft, 'Value at Risk: The Danger of Relying too Much on Only One Tool' *Financial Times* (London, 21 March 2011) http://www.ft.com/cms/s/0/79752608-5371-11e0-86e6-00144feab49a.html#axzz4H6rFFB26 quoting Miles Kennedy accessed 12 August 2016.
[979] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 217.

range of complementary risk metrics, and always have done'.[980] Hence by taking a well rounded approach to risk a better formulated and detailed collation of data will be derived, and in return produce a better and more robust set of results that should enable a bank to make a stronger conclusion from the risk being quantified. If successful, it could also help with identifying volatilities and risks without delay.[981] Burchi is correct, and this would be of great use going forward. If this can be achieved, whether partially or in full, then it will create positive effects for world economies. In Chapter 5 the recommendation put forward by the author of using several models and approaches, and better regulation will be explored; this encompasses the areas of risk detailed during this section on VaR.

CONCLUSION

In Chapter 4 the main three risks and shortcomings were examined. It has been highlighted that whilst the Basel regulations have improved since Basel I, there is still a lot of work to do in order for the Basel regulations to become more robust and for encouraging and supporting robust banking and financial regulation protocol.

[980] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 263.
[981] A Burchi, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284, 294.

Firstly, it was acknowledged that capital ratios are an integral part of the Basel regulations and for banking regulation. It was explained how it will be too costly for some banks to reach and the target set for full implementation is unachievable. It was also explained that capital ratios have been focused on too much and to the extent that other areas have been neglected such as liquidity levels, albeit an area which has been discussed in recent years by the Basel Committee. Liquidity and over reliance will be the main talking points in Chapter 5 when discussing recommendations on new measures going forward.

Secondly, it was illustrated how CRAs have played a huge role since Basel II and the impact that this has had in recent times. The failure to foresee the financial crisis is the strongest evidence to date that indicates reform needs to happen. There were four major weaknesses explored: high concentration, over reliance, poor process by which sovereign debt is rated, and conflicts of interest. Regulation will be the main talking point in chapter 5 when recommending new measures for going forward.

Thirdly, the final risk examined was VaR; a complex tool to calculate risk. It was highlighted how VaR contains many risks and that for such an important role it conducts, there are many inadequacies that raise serious doubt of it as a risk measuring tool, and inclusion in the Basel regulations has been questioned. Risks covered included: inability to cope with volatile markets, struggles with complex products, over reliance of VaR, applied incorrectly, Analytical Variance/Covariance Approach, Historical

Simulation Approach and Monte Carlo Simulation Approach. In Chapter 5 it will be discussed how VaR can be improved by looking at other risk calculating models to support VaR, as well as looking at the ways in which the current approaches for calculating risk under VaR can be strengthened. The use of several models and approaches, and regulation will be the main talking points in chapter 5 when recommending new measures going forward.

What Chapter 4 has endeavoured to articulate is that there are weaknesses of Basel III, similarly to Basel I and II, and that the author believes the three aforementioned are some of the most harmful. It should be appreciated that it is easy to criticise and pinpoint weakness; the hard part is to rectify those weaknesses. On this note the next and final chapter will consolidate the material discussed, offering recommendations to improve Basel III with future regulation in mind and providing final thoughts to end the research.

CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS

Chapter 4 explored three main risks and shortcomings of Basel III; capital ratios, CRAs and VaR. The research has drawn a picture of how the Basel regulations began and developed over the years to the current period of time. It has also been illustrated that despite several versions of the Basel regulations there is more work to be done. The remainder of this chapter will draw from the risks and shortcomings expressed in Chapter 4, thus concluding the entire research. The main points will be as follows.

Capital Ratios - The main issues here are cost and an unachievable deadline (and that by increasing capital levels will solve the problems that occurred during the financial crisis). In addition, over reliance by the Basel Committee in that capital adequacy is the central concept of banking regulation whilst neglecting other facets such as quality of capital and liquidity. The main talking point and suggested solution from these issues and how this can be narrowed further, will be to focus on liquidity levels whilst appreciating that an over reliance by the Basel committee has been evident for many years. In summary, liquidity will be the focal point of capital ratios in Chapter 5.

CRAs - The main issues here are high concentration, over reliance, processes by which sovereign debt is rated, and conflicts of interest. The main talking point and suggested solution to be taken from these issues and how this can be narrowed further, will be to focus on tighter

regulation, less emphasis on CRAs, more competition, reduction of importance given to CRAs and the over reliance of such, increase regulation or limit use of CRAs, and more accountability. These issues overlap and will be merged. In summary, regulation will be the focal point of CRAs.

VaR - The main issues here are the inability to cope with volatile markets, it struggles with complex products, over reliance of VaR, applied incorrectly, and the three approaches to calculating risk which are the Analytical Variance/Covariance Approach, Historical Simulation Approach and the Monte Carlo Simulation Approach. Therefore, the main talking points and suggested solution will be the use of several models and approaches as this will encompass all of the aforementioned issues bar applied incorrectly, this will fall under the heading of regulation. In summary, the use of several models and approaches and regulation will be the focal points.

There are two reasons why Chapter 5 will focus on the three aforesaid areas. Firstly, the author believes these to be the main issues surrounding Basel III and it continues from those weaknesses discussed in Chapter 4. Secondly, Chapter 5 concentrates on conclusions and recommendations and, therefore, the three aforementioned risks and shortcomings will be considered in order to devise recommendations so that Basel III can become stronger, especially with Basel reforms arriving in the not too distant future.

CAPITAL RATIOS

The main talking points in this section will be liquidity levels whilst taking into account the issue of over reliance by the Basel Committee i.e. that capital adequacy is the central concept of banking regulation. Liquidity levels will be examined as this played a significant part in the financial crisis. Furthermore, it highlighted that whilst minimum capital requirements are paramount, sufficient liquidity levels are needed to further support financial stability. As Trevisan points out,[982] adequate liquidity levels are also required.

The financial crisis revealed that banks did not hold sufficient liquid means[983] and uncovered that Basel II was inadequate and lacking robust regulation when it came to liquidity.[984] Consider the case of Northern Rock[985] where minimum capital requirements were exceeded but liquidity levels were low.[986] The business plan used was based not only on borrowing from the United Kingdom, but also the international money markets. In essence, Northern Rock relied on international money

[982] F Cannata and M Quagliariello, 'The New Framework for Liquidity Risk' in G Trevisan, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 207.
[983] EU Focus, 'Commission Adopts Detailed Prudential Rules for Banks and Insurers' (2014) 325 EU Focus 1, 3.
[984] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 443.
[985] See J Goddard, P Molyneux and J O S Wilson, 'The Financial Crisis in Europe: Evolution, Policy Responses and Lessons for the Future' (2009) 17(4) JFRC 362, 363.
[986] Lehman Brothers was another case whereby liquidity was a problem too. See D Murphy, 'The Rising Risk and Roles of Financial Collateral' (2014) 1 JIBFL 3, 5-6.

markets to a far greater extent than others, so when the market began to erode Northern Rock was in a situation where they could not repay their loans. Interestingly the then FSA stipulated that Northern Rock was solvent and met the minimum capital requirements. It now seems that the FSA were trying to settle the nerves of those connected rather than accepting the true effects of what was about to unravel.[987] Knowingly or unknowingly is a different matter altogether. Perhaps another reason was that nobody expected the bond markets to freeze.[988] Haynes suggests that it was a combination of trying to instill confidence in the market by the then FSA and that the possible freezing of the bond markets was not anticipated. Either way, the crisis quickly unfolded.

The author has stipulated that liquidity was a huge problem for capital ratios during the financial crisis, therefore it would be helpful to reconsider what liquidity is in order to comprehend the points that will be discussed over the coming section. Liquidity can be described as, '…a bank's ability to fund asset increases and meet financial obligations, without incurring damaging losses'.[989] The financial crisis illuminated the problematic area of liquidity and the impact it could have in banking. To tackle the problems that occurred during this time i.e. excess liquidity risk, weak quality of capital and excess leverage; the Basel Committee

[987] F Cannata and M Quagliariello, 'The New Framework for Liquidity Risk' in G Trevisan, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 237.
[988] Private meeting, Professor Andrew Haynes, 27 June 2018 University of Wolverhampton, Wolverhampton.
[989] M A Petersen and J Mukuddem-Petersen, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press 2014) xv.

introduced new liquidity regulation. Basel III was in part drafted in order to stop future financial crises caused by liquidity issues, and how further work is still required to improve this. Bearing in mind that Chapter 5 is concerned with conclusions and recommendations, ideas will be put forward to enhance this area of banking regulation.

Capital Ratios - Liquidity

The financial crisis made it clear that liquidity and banking regulation both need each other. The insufficient liquidity levels and quality of liquidity in banks leading up to and during this time were unstable and levels of liquidity were low. Due to confidence in the financial markets leading to the ease of acquiring low cost funding, it is now clear to see the major crash that would eventually take place. This meant that when market conditions reversed there was an extreme reduction in liquidity levels.[990] The consequences and repercussions meant central banks, as well as regulatory bodies, had to secure those banks and markets in which were being operated.[991]

[990] Ibid 19.

[991] It should be recognised that in the area of capital adequacy the work completed by the Financial Stability Board in the form of Total Loss-Absorbing Capacity (TLAC) standard that was released in 2015. It seeks to improve capital adequacy among the global systemically important banks of the world. See Financial Stability Board, 'Principles on Loss-absorbing and Recapitalisation Capacity of G-Sibs in Resolution: Total Loss-absorbing Capacity (TLAC) Term Sheet' http://www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf accessed 4 April 2019. While an important development, it will not be discussed further for two reasons. First, the research has been guided toward liquidity when discussing capital ratios in particular LCR and NSFR. Second, TLAC is aimed at global systemically important banks and the research is more akin to all banks.

The introduction of liquidity regulation in the form of two new liquidity requirements

It is important to consider what the Basel Committee have implemented, then recommendations can be put forward. In September 2010 the Basel Committee with the aid of the Working Group on Liquidity,[992] created new quantitative measures to tackle liquidity through Basel III. Jones comments, 'Prior to the crisis, asset markets were buoyant and funding was readily available at low cost. However, the rapid reversal in market conditions illustrated how quickly liquidity can dry up with the ensuing shortage potentially lasting for an extended period'.[993]

A keen focus was put on capital and liquidity levels. Lee suggests, '…the rationale was that Basel III would negate the deleterious effects of liquidity shocks on credit extension'.[994] This is a valid point and one which was aided for the first time with detailed regulation in the form of liquidity rules[995] and can be viewed as a move in the right direction. This movement began with a paper that was published prior to September 2010 during the turmoil of the financial crisis titled "Principles for Sound

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[992] IIF, 'Committees and Working Groups' https://www.iif.com/advocacy/committees accessed 28 October 2016.
[993] R Jones, 'Mitigating Intraday Liquidity Risk: Limitations of the Supervisory Response' (2016) 4 JIBFL 199, 199.
[994] M A Petersen and J Mukuddem-Petersen, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press 2014) 19.
[995] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 444.

Liquidity Risk Management and Supervision",[996] and was promoted by the Basel Committee with an aim of improving liquidity risk management. To bolster these principles, the Basel Committee created two minimum liquidity standards based on those worked on with the Working Group on Liquidity in 2010. Both aimed to reinforce the principles laid out in the aforementioned paper and to further improve liquidity measures so that a future financial crisis could be curtailed. Essentially, the minimum liquidity standards should allow banks to become more resilient when faced with short and medium term problems.[997] Cranston et al. are not wrong, by introducing liquidity measures through the Basel regulations does, in theory, acknowledge that liquidity is vital for financial stability and that it will improve banking regulation going forward.

The two new measures are LCR and NSFR. The rather interesting point here is that this was the first time that detailed global liquidity rules were put in place[998] and a milestone for banking regulation. Both measures are crucial for Basel III and liquidity measures as both aim to toughen capital and liquidity standards. It should be acknowledged that there are other traditional risk measures ranging from nonperforming assets to brokered deposits ratio, but the research will focus on LCR and NSFR as they were

[996] Bank for International Settlements, 'Principles for Sound Liquidity Risk Management and Supervision' http://www.bis.org/publ/bcbs144.pdf accessed 7 October 2016.
[997] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 56.
[998] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 444.

both born from the financial crisis and promote the liquidity standards encapsulated in the 2008 Basel Committee paper.[999]

We now need to consider what LCR and NSFR have striven to accomplish by contributing to stronger capital and liquidity measures. As will be exposed, more work is needed.

Liquidity Coverage Ratio (LCR)

The purpose of LCR is to make sure that banks are resilient in holding a sufficient quantity of liquid assets to cover all needs during a thirty day period.[1000] This will be used in stressed conditions such as a credit rating downgrade, wholesale market restrictions, or secured funding is in need of collateral. These instances will require a bank to use their liquid assets to remain stable and efficient.

Baber succinctly describes LCR as:

> 'At all times, investment firms and credit institutions must hold liquid assets, the sum of which equals or exceeds the liquidity outflows less the liquidity inflows under stressed conditions, so as to ensure that these organisations maintain sufficient levels of

[999] Bank for International Settlements, 'Principles for Sound Liquidity Risk Management and Supervision' http://www.bis.org/publ/bcbs144.pdf accessed 23 April 2018.
[1000] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 153.

liquidity buffers to address any possible imbalance between inflows and the outflows, under gravely stressed conditions over a 30-day period'[1001]

Keeping this in mind, LCR has been described as a tool to strengthen banks and the ability to withstand adverse shocks in the market[1002] and should allow a bank to withstand financial volatility until day thirty, at which point a supervisor should have put in place appropriate measures.[1003] In short, LCR aims to soften liquidity stress events over a thirty day period.

What LCR endeavours to achieve is to energise banks to hold high quality liquid assets[1004] (HQLAs) that have no burden. This will address the problem that most banks had during the financial crisis whereby liquid assets were of poor quality and severely impeded. This can be associated to decades of decline in liquidity ratio which started from the 1960s when banks lent more and accumulated poor assets, as Elliott notes.[1005] The introduction of HQLAs are to counterbalance and offset net cash outflows that are evident during times of short term liquidity problems.

[1001] G Baber, 'Basel III Implementation and the European Union: The Proposed Capital Requirements Regulation (CRR)' (2012) 33(12) Comp Law 386, 395-396.
[1002] KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/liquidity-challenges.pdf page 4 accessed 7 October 2016.
[1003] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 57.
[1004] Assets that are high in quality and easy to convert into cash.
[1005] Larry Elliott, 'Banks Now Have More Liquid Assets but Solvency Threat Remains' *The Guardian* (London, 3 July 2012) https://www.theguardian.com/business/economics-blog/2012/jul/03/banking-industry-liquidity-quality-assets accessed 29 June 2018.

What the Basel Committee are trying to do here is obvious in that by requiring banks to hold HQLAs means that these can be converted into cash with little cash loss (subject to haircuts) when needed. Essentially, HQLAs are of the highest quality and by nature most liquid. This was not evident leading to and during the financial crisis. The benefit of HQLAs is that they are unencumbered assets that can be converted easily to meet liquidity needs.[1006] Ugeux raises a valid point and it is one that can save banks in the future, after all if high quality assets are plentiful and can fast and freely be turned into liquid assets, then a bank stands a much better chance of remaining stable during financial hard times.

LCR is rather strict and in the absence of banking stress an ongoing minimum of 100 percent must be maintained by a bank. Further to this, in order to be classed as a HQLA the asset must be liquid in short term stress scenarios combined with being available for intervention by central banks.[1007] Banks will be required to hold these HQLAs to meet extreme cash outflow for the next thirty days. Therefore, LCR can be expressed as stock of HQLAs over total net cash outflows of the next thirty days. Furthermore, the stressed cash outflow will include a segment of retail deposits and all wholesale funding which is due to mature within thirty days.[1008] It should be noted that banks can offset part of wholesale

[1006] G Ugeux, 'Building a European Capital Markets Union: The Need for Liquidity and Focus' (2016) 31(6) JIBLR 314, 319.
[1007] M A Petersen and J Mukuddem-Petersen, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press 2014) 22.
[1008] KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/liquidity-challenges.pdf page 4 accessed 7 October 2016.

funding with an inflow of funds they have placed with other banks, provided that maturity is within the next thirty days. A further point to note is that a currency by currency basis will apply so that banks can survive major disruption in the market place and also exchange rate fluctuations that may affect currency convertibility, thus providing more stability. There are two types of assets under LCR, level 1 and level 2. The former containing cash and central bank reserves as well as securities backed by central banks and sovereignties. Level 1 can be held on an unlimited basis[1009] and has no haircut. These consist of coins and banknotes for example and are the most liquid of assets.[1010] The latter is split into level 2a and level 2b, consisting of government securities, bonds and debt securities for level 2a, and lower rated corporate bonds or residential mortgage securities for level 2b. Level 2 can be held up to 40 percent of stock and has a 15 percent (level 2a) and 50 percent (level 2b) haircut.[1011] In essence, to gain the minimum 100 percent stipulated by the Basel Committee would mean a 60/40 split between the two types of assets held under LCR.

In summary, what can be ascertained is that HQLAs are assets that can be sold with little or no loss on the private market and should not be

[1009] F Cannata and M Quagliariello, 'The New Framework for Liquidity Risk' in G Trevisan, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 214.
[1010] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 124.
[1011] Investopedia, 'Liquidity Coverage Ratio - LCR' http://www.investopedia.com/terms/l/liquidity-coverage-ratio.asp accessed 14 October 2016.

affected in stressed market conditions.[1012] A welcomed addition to the Basel regulations that should bolster the rules on liquidity.

The implementation period for LCR began 1 January 2015[1013] and started at 60 percent. This will increase to 100 percent by 1 January 2019, thus increasing by 10 percent every year. It is wise to include an implementation period so that countries and banks are able to accommodate such regulation. Whether this implementation period of four years will suffice is yet to be seen.

LCR is perceived to be a positive addition for the Basel regulations for many reasons, for example assets 'parked' with brokers. Petitjean states, '…assets that are "parked" with prime brokers by institutional investors can be very quickly withdrawn and no longer available as a source of financing in repo transactions'.[1014] This produced instability and severe cash outflows at times of crisis, which is not a desired effect during bad economic times. It is a positive step forward for liquidity because prior to this point parked assets could be withdrawn at speed, increasing the chances of instability. By introducing LCR a bank will have a safety net to protect against instances of this nature.

[1012] EU Focus, 'Commission Adopts Detailed Prudential Rules for Banks and Insurers' (2014) 325 EU Focus 1, 4.
[1013] M A Petersen and J Mukuddem-Petersen, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press 2014) 23.
[1014] M Petitjean, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16, 22.

It is firmly believed that LCR will be an integral part of the reforms currently taking place and will enable the banking system to become more robust and durable in stressed scenarios.[1015] With that in mind, and before the weaknesses of LCR are discussed and recommendations are suggested, the second new measure (NSFR) will be explored.

Net Stable Funding Ratio (NSFR)

The goal of NSFR is to make sure a bank is able to support itself over a longer period as the financial crisis made it evident that the idea of long term loans with short term deposits being safe was refuted during this time.[1016] Basically, banks began to increase funding from the capital markets and the short term aspects of such became unreliable. In respect of long term funding this can be described as the following:

> 'Investment firms and credit institutions are to ensure that their long-term funding requirements are sufficiently met with a variety of stable funding instruments, in order to satisfy their financing obligations in the long run as they come due, in an orderly manner, under both normal and stressed circumstances'…these organisations must ensure they (i) prudently assess the quantity of assets they are not able to cover to cash during times

[1015] G Ugeux, 'Building a European Capital Markets Union: The Need for Liquidity and Focus' (2016) 31(6) JIBLR 314, 319.
[1016] A Docherty and F Viort, *Better Banking* (John Wiley & Sons Ltd 2014) 154.

> of prolonged unpredictable and systemic market stress of at least one year's duration, and (ii) maintain at least an equal amount of stable funding with an effective maturity that is prudently assessed to be more than a year under stress conditions'[1017]

In light of the aforesaid and in comparison to LCR, NSFR looks at longer term funding[1018] of bank assets and the activities undertaken, and is designed as a more structural measure.[1019] NSFR aims to create and ensure a minimum stable funding standard of one year horizon, hence the difference between it and LCR; although it does have a similar 100 percent minimum level.[1020] In essence, NSFR works to reduce maturity mismatches that can occur between assets and liabilities in relation to remaining contractual maturities that have one or more years to run. What NSFR promotes is the need for banks to hold long term debt or equity against difficult to finance products.[1021] Davis states that NSFR operates as the following, '…the more the bank's liabilities are liquid, the

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[1017] G Baber, 'Basel III Implementation and the European Union: The Proposed Capital Requirements Regulation (CRR)' (2012) 33(12) Comp Law 386, 396.
[1018] R Cranston and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017) 59.
[1019] KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/liquidity-challenges.pdf page 4 accessed 7 October 2016.
[1020] F Cannata and M Quagliariello, 'The New Framework for Liquidity Risk' in G Trevisan, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 221.
[1021] J.P.Morgan, 'Leveraging the Leverage Ratio' https://www.jpmorgan.com/jpmpdf/1320634324649.pdf accessed 28 October 2016.

more the bank is required to hold liquid assets on its balance sheet…'.[1022] This conclusion is sensible, after all liquid assets should be able to cover bank's liabilities. The aim of NSFR is to reduce the reliance on short term whole sale funding in instances where market liquidity is plentiful, and because of this it endorses better liquidity measurement risk with on and off sheet balance facets.[1023] As Wandhofer notes, this enables banks to reduce any over reliance on whole sale funding which was a cause of the financial crisis.[1024]

NSFR can be expressed as available stable funding[1025] (ASF) over required stable funding[1026] (RSF). This is so less stress and pressure are put on central banks and are thus excluded from NSFR. Basel III stipulates that the ratio should be greater than one in order to meet the requirements set and this will enable ASF to meet the RSF over the evaluation period.[1027] The ASF is made up of several forms of stable funding from maturities over one year, stable deposits, less stable deposits, and unsecured wholesale funding if it is provided by non-

[1022] P Davies, 'Liquidity Safety Nets for Banks' (2013) 13(2) JCLS 287, 302.
[1023] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 22.
[1024] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 129.
[1025] Available stable funding is capital and liabilities that are expected to be reliable.
[1026] Required stable funding is the liquidity characteristics and residual maturities of assets.
[1027] M A Petersen and J Mukuddem-Petersen, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press 2014) 26.

financial corporates and sovereignties etc.[1028] The RSF is made up of cash and money market instruments to unencumbered equity securities and unencumbered corporate and covered bonds ranging from 0 to 85 percent.[1029]

The implementation of NSFR was scheduled for 1 January 2018 due to the amount of time it will take banks to comply, compared with an earlier date for LCR.[1030] However, due to issues with LCR among other teething problems, there was concern that it could be delayed[1031] or even cancelled.[1032] It has since come to fruition.[1033] To cancel NSFR does seem implausible as NSFR was only introduced in 2010 and has yet to be fully implemented. It would be irresponsible to cancel something that has not yet fully formed. Furthermore, it has been suggested that NSFR will be the easier of the two measures to adhere to and that most banks, those of a large nature at least, are already meeting the minimum 100 percent

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[1028] F Cannata and M Quagliariello, 'The New Framework for Liquidity Risk' in G Trevisan, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 222.
[1029] Ibid.
[1030] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 445.
[1031] Henry Teitelbaum, 'NSFR Implementation Uncertain After Basel III Compromise on LCR Phase-in' *Financial Times* (London, 22 January 2013) http://www.ft.com/cms/s/2/fcb4fe7c-64c6-11e2-ac53-00144feab49a.html?ft_site=falcon&desktop=true#axzz4QqFwVaXC accessed 23 November 2016.
[1032] M A Petersen and J Mukuddem-Petersen, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press 2014) 27.
[1033] Bank for International Settlements, 'Net Stable Funding Ratio (NSFR) - Executive Summary' https://www.bis.org/fsi/fsisummaries/nsfr.htm accessed 29 June 2018.

requirement.[1034] Therefore, perhaps what should be done is to amend and modify NSFR to make it more applicable and a useful tool alongside LCR. Either way, adjustments need to be made.[1035] As Schwerter highlights, Basel III did make the financial system more stable, but it also created incentives for market participants. Therefore, adjustments are required and LCR and NSFR are a step in the right direction.

In summary and reference to both LCR and NSFR measures, if a bank believes that the guidelines cannot be met then the appropriate regulator should be contacted with a plan to comply within a suitable timescale.[1036] Until this is achieved, regular reports must be provided on the progress of achieving the required standards. The author would applaud this common sense approach as this will help a smoother transition for full adherence to the two liquidity measures. It is believed that NSFR as well as LCR will have a positive impact for the banking industry and will provide more resilience to a (still) fragile environment.[1037] Whilst this may be true there are some notable weaknesses that need to be rectified in order for this to happen, some of which have been recognised by the Basel Committee[1038] of which will be alluded to now.

[1034] PricewaterhouseCoopers, 'Ten Key Points from Basel's Final NSFR' https://www.pwc.com/us/en/financial-services/regulatory-services/publications/assets/net-stable-funding-ratio-basel-iii.pdf page 1 accessed 23 November 2016.
[1035] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 351.
[1036] G Baber, 'Basel III Implementation and the European Union: The Proposed Capital Requirements Regulation (CRR)' (2012) 33(12) Comp Law 386, 396.
[1037] P Davies, 'Liquidity Safety Nets for Banks' (2013) 13(2) JCLS 287, 304.
[1038] S Schwerter, 'Basel III's Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337, 350.

Weaknesses

There are problematic areas that surround LCR and NSFR which prohibit these new measures from becoming useful tools. For instance, the conflicting incentives that both measures promote that influence how a bank approaches funding.[1039] Pinedo believes that NSFR, for example, would create an incentive to place more focus on longer term funding but the conflicting point here is that a bank will also have the desire to limit longer term obligations. Some of these areas will now be analysed to highlight the need for further work to the liquidity framework. There will be clear links with what has been identified in Chapter 4 i.e. high costs and implementation period.

Firstly, high costs will be a problem for those banks that rely heavily on short term wholesale funding.[1040] The is due to the Basel III regulations imposed i.e. LCR and NSFR, so banks that rely on short term wholesale funding will find it hard to meet these ratios. LCR for 30 days and NSFR for longer, means that banks will have to change the way in which they operate thus equalling higher costs to adapt to. Equally, it will hurt those banks that have insufficient quantities of HQLAs. This will mean that adjustments will be required to comply with these new minimum ratios. On the point of HQLAs, some banks argue that there are not enough of

[1039] A T Pinedo, 'Fewer Options for Capital-Raising by Banks: More Stability?' (2015) 11 JIBFL 671.
[1040] KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://assets.kpmg.com/content/dam/kpmg/pdf/2012/06/Liquidity-challenges-O-201205.pdf page 3 accessed 7 October 2016.

them to obtain in the country that they operate in. This could be due to small government debt or less developed economies. Evidently, if there are no opportunities to obtain HQLAs then a bank will find it almost impossible to meet the Basel III requirements.[1041] This problem is currently immersing the Asian Pacific and Middle Eastern regions; although it has been recognised that alternative solutions are needed and have been accepted in some countries, for instance Sharia law which cannot use certain HQLAs such as interest bearing debt securities.[1042] The discretion by the Basel Committee is sensible as obtaining HQLAs in compliance with Sharia law would have been hard to satisfy.

Secondly, profitability will come into question due to banks having to adjust balance sheets so that more HQLAs are held, often being of low yield. The bank in this instance will need to raise more expensive retail deposits and medium and long term wholesale funding will need to be further sourced whilst reducing long term lending.[1043] This will not only reduce the yield on a bank's assets but also increase liabilities. Needless to say, a tough task for most that will cause problems.

[1041] Ibid.
[1042] S T McFarland and R C Maysami, 'Banking Law and Regulation in the United Arab Emirates: Current Status, Recent Developments, and Prospects for the Future' (2015) 30(7) JIBLR 393, 399.
[1043] KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/liquidity-challenges.pdf page 3 accessed 7 October 2016.

Thirdly, international banks will be affected in that the ability to move funds and liquidity from one place to another will be more arduous.[1044] This is due to more control being asserted by local governments which will restrict what was once controlled centrally by a bank. In the end, the freedom to move will be stifled and flexibility will almost vanish as a consequence of these changes. The author would postulate that a problem may arise whereby an international bank is experiencing financial trouble due to a financial crisis in one market and may be reliant on liquid funds from its base in another market. If it is more difficult to move liquidity between jurisdictions, this could prove costly for said bank.

Fourthly and similar to the first weakness, high costs will be incurred due to assembling data, monitoring mismatches and assessing those mismatches for maturities and putting in place robust plans should the worst happen.[1045] The time and money needed to put in place recovery plans are detrimental in that pressure will be put on contingency liquid arrangements. In practice, constant testing will be required and different stress tests will need to be in place to recognise periods of abnormality;[1046] this adding to the already high costs. A further hindrance is that the Basel Committee does not have as much experience in this area compared to capital which the Basel Committee have vast amounts

[1044] Ibid.
[1045] Ibid.
[1046] N O Angermuller and S Zeranski, 'Supervisory Review and Assessment of LCR Stress Scenarios with NCO Pre-Tests' (2016) 31(10) JIBLR 527, 530.

of research and data since Basel I.[1047] As a consequence this is an achilles heel for the Basel Committee.

What can be ascertained from the above weaknesses is that the risks associated with LCR and NSFR are not necessarily the mechanisms but rather the cost, time and structural changes that need to occur for implementation. This view also corresponds with a recent study in Germany which found that most large banks will struggle to comply with LCR and NSFR, yet smaller and medium size banks would be able to accommodate more easy.[1048] The study suggests that because of the sheer scale of large banks, the cost, time and structural changes will be highly burdensome and difficult to accomplish, especially in the time period put forward by the Basel Committee. If large banks in an established economy like Germany are likely to find the liquidity framework difficult, then other large banks in leading economies will do so too. Angermuller believes that the new requirements will have a considerable impact and this is partly to do with the German banking market consisting of smaller banks rather than larger ones. Smaller banks in Germany have not faced the same problems as their larger counterparts and this often impacts on regulatory costs.[1049] Bearing this in mind and what has been discussed around liquidity in the research, recommendations will now be considered in order to improve liquidity.

[1047] E Lee, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433, 445.
[1048] N O Angermuller, 'Basel III: Implications of Risk Management Requirements in Germany' (2012) 27(12) JIBLR 509, 511.
[1049] Ibid 512.

Recommendations

It should be acknowledged that making the liquidity framework stronger will alleviate the problem of the issue of over reliance; a problem previously highlighted in the research, therefore no recommendation(s) will be put forward in this respect because whilst liquidity falls under the auspice of capital ratios it moves away from high capital illiquid assets to high capital liquid assets; a problem that plagued banks during the financial crisis.

It should be noted that the author acknowledges what the Basel Committee have tried to do with these liquidity measures in order to combat the problematic area of liquidity. However, there is still much more to do to improve the liquidity framework.

Firstly, consideration needs to be given toward LCR, HQLAs and the optimistic implementation period. The addition of quality assets has been an important introduction for the new liquidity framework put forward by the Basel Committee. Whilst the author strongly endorses the addition of LCR alongside HQLAs, the author would recommend a longer implementation period to allow banks to acquire the amount required. Whilst a deadline for full implementation by 1 January 2019 has been set, it would appear too optimistic and tough to meet. Considering that LCR began on 1 January 2015, the gradual rise from 60 percent to 100 percent over the space of four years is far too quick. The reason for this is simple,

HQLAs take time to acquire, especially if a bank has many poor quality assets. Also, in some countries HQLAs are hard to come by (Asia and the Middle East) and a bank will struggle to obtain the minimum amount required. By allowing more time a bank will be able to obtain the necessary HQLAs without compromising on the asset itself or risking profits. Additionally, it has been found that many banks believe that a longer implementation date would allow those banks to facilitate toward full compliance and it would also allow banks to adopt less costly strategies.[1050] In a worst case scenario a bank may cut corners in reaching the target set. Whilst a longer implementation period is not ideal as there is always a risk that another financial crisis could occur in that time, it would seem the most appropriate action in order for it to be conducted correctly. The author would also suggest that the implications of some countries adopting the liquidity requirements earlier than expected can have potentially negative implications that could change the supply and demand landscape,[1051] thus reinforcing a longer implementation period.

[1050] European Banking Authority, 'EBA Report on Liquidity Measures and the Review of the Phase-in of the Liquidity Coverage Requirement Under Article 461(1) of the CRR' https://www.eba.europa.eu/documents/10180/1700800/EBA+report+on+liquidity+measures+and+the+review+of+the+phase-in+of+the+liquidity+coverage+requirement+%28EBA-Op-2016-22%29.pdf page 111 accessed 23 April 2018.
[1051] Morgan Stanley, 'Basel III: Impact on the Money Markets' https://www.morganstanley.com/im/publication/insights/regulatory/regulatory_baseliiiimpactonthemm_us.pdf page 3 accessed 23 April 2018.

Secondly, and following a similar path, are the implementation issues surrounding the EU with specific regard to HQLAs.[1052] The issue is the complexity of current EU rules and trying to harmonise these rules with the Basel III framework. Also, it is apparent that like the United States the EU favours its own debt over others. What this means is that bank portfolio managers will struggle to optimise their portfolio over several jurisdictions. The second issue points to the first recommendation previously cited and that a longer implementation period is needed. A longer implementation period would allow problems such as those discussed within the EU to be extinguished and would also rectify favouritism towards own debt. It should be noted that the EU is not the only region to favour own debt, Droogenbroek comments that the United States also favour their own debt. The United States did this whilst finalising their LCR compliance procedure and only included agency mortgage backed securities in relation to HQLAs.[1053]

Whilst a longer implementation period poses the risk of another financial crisis, it is unlikely[1054] and in return there should be more co-operation and successful completion of the targets set by the Basel Committee. Unlike the first recommendation put forward in relation to HQLAs, it may take longer for the implementation period due to the rules and regulations

[1052] Gregory van Droogenbroek, 'Banks Far from Consensus on Classifying High-Quality Liquid Assets in the EU' https://www.bloomberg.com/enterprise/blog/banks-far-from-consensus-on-classifying-high-quality-liquid-assets-in-the-eu/ accessed 14 October 2016.
[1053] Ibid.
[1054] Jeff Cox, 'Yellen: Banks 'Very Much Stoner'; Another Financial Crisis not Likely 'In Our Lifetime'' https://www.cnbc.com/2017/06/27/yellen-banks-very-much-stronger-another-financial-crisis-not-likely-in-our-lifetime.html accessed 23 April 2018.

in place created by the EU. Therefore, it would seem logical to extend the implementation period.

Thirdly, issues with HQLAs and definition of assets. The current definition of high quality assets is fairly narrow and strict. It would seem appropriate to reconsider the categories under this heading to include assets such as equities and gold.[1055] This would also alleviate the problem faced by some banks whereby HQLAs are hard to obtain. It would also be helpful to include assets that are eligible at central bank level as history has shown that these type of assets are flexible and liquid during financial crises.[1056] Due to the lack of future predictability of liquid assets, it is easy to see how valuable it could be to include a more diverse set of assets for banks to use. This would not only broaden the spectrum of HQLAs, it would also allow banks in Asia and the Middle East to obtain without hindrance. This would not affect the implementation period as it could be amended and included in the Basel regulations.

The final recommendation is in relation to the ideology around liquidity risk management. This recommendation relates to liquidity risk management and what the culture was like during the time of the financial crisis. The problem that existed at the time was a culture of extremely high confidence and belief that the many years of vast money

[1055] KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/liquidity-challenges.pdf page 10 accessed 14 October 2016.
[1056] Ibid.

and profit making was never going to stop. Many viewed the notion of liquidity risk management as regulation that needed to be complied with, almost a burden,[1057] rather than an important tool to combat financial risk. It is this lack of respect and utter disregard for liquidity risk management was the downfall for a lot of banks. The idea that bonds and structured credit could be sold anytime, or that VaR was the perfect tool because it had always produced satisfying results, aided this further.

It has been highlighted that loans were growing faster every year than stable funding and relying on VaR and other ratio based tools implied everything was secure and stable. So why question and place any real importance on liquidity risk management it could be argued.[1058] It is easy to state that liquidity management should be taken more seriously, but considering the environment which existed leading up to the financial crisis would have been difficult for most to contemplate. Evidently, that is what happened.

The author would suggest that all banks, regardless of size, create a dedicated department to liquidity risk management. It should consist of suitably qualified persons and it should not include anyone who was involved during the years leading to and during the financial crisis. Furthermore, authority should be bestowed on the liquidity risk management department due to potential repercussions if they have

[1057] L Matz, *Liquidity Risk Measurement and Management* (Xlibris 2011) 561.
[1058] Ibid.

insufficient influence. By doing so, liquidity risk will be prevalent in all banks and it will be taken more seriously due to a dedicated team and that those working within the department will not have experienced the arrogant or naive culture that was rife before. This could be enforced by recommending and incorporating it into the Basel regulations as a best practice which will filter down to domestic levels.

Conclusion

The new liquidity framework provides a strong set of rules for banks to adhere to when it comes to liquidity and it addresses some of the issues that led to the financial crisis. It further bolsters the principles laid down in the 2008 paper for better liquidity management.

Since revisiting the principles[1059] that were originally published in 2000 i.e. Sound Practices for Managing Liquidity in Banking Organisations,[1060] the Basel Committee have produced a set of guidelines since 2008. In a short period of time there is a noticeably better framework in place to combat liquidity issues. It is imperative that banks work efficiently and promptly to meet the requirements set by the Basel Committee. Whilst this will be difficult for all, some more than others, the financial crisis has

[1059] Bank for International Settlements, 'Principles for Sound Liquidity Risk Management and Supervision - Consultative Document' http://www.bis.org/publ/bcbs138.htm accessed 14 October 2016.
[1060] Bank for International Settlements, 'Sound Practices for Managing Liquidity in Banking Organisations' http://www.bis.org/publ/bcbs69.pdf accessed 14 October 2016.

shown that having large amounts of capital which mainly consists of illiquid assets, are not able to save even the biggest of banks.

Whilst a sooner rather than later approach would be ideal, it would not be practical and feasible to assume that all banks will be able to meet the deadlines set. The recommendations put forward by the author, for example a longer implementation period and a wider definition of HQLAs, would greatly help this cause. It would be advantageous to meet the 2019 deadline, but unfortunately it is both unrealistic and burdensome. This could impact on lower profits for banks which in turn could mean that operations for those banks will be withdrawn or reduced in the countries operated in. Equally, the costs of having to implement over a short period of time could mean staff cuts and redundancies to retrieve monies spent on adhering to the new liquidity framework.

In summary, the new liquidity framework is both necessary and beneficial for the prudent management and implementation of liquidity measures. It assists with the keen focus of Basel III - capital and liquidity standards and it will aid and support capital ratios and by default an over reliance placed on high minimum capital illiquid assets required by the Basel Committee since Basel I. It will also enable banks to raise a substantial buffer when difficult times arise. Liquidity is paramount.

CREDIT RATING AGENCIES

At the beginning of Chapter 5 the main talking points in relation to CRAs were summarised. Specifically, these were tighter regulation, less emphasis on CRAs, more competition, reduction of importance given to CRAs and the over reliance of such, limited use of CRAs, and more accountability. All of these points will assist in strengthening banking regulation and also refine CRAs and their role in providing prudent financial reports. Some of these points will overlap and will be merged to form a more concise approach to tackling the issues that come from CRAs, and how to improve the negative effects that they have produced. To consolidate the aforementioned points, the main talking point will be regulation whilst bearing in mind the issue of over reliance. Regulation will cover the aforesaid areas listed as they all fall under the auspice of regulation in some form or other.

In the author's opinion CRAs had a detrimental impact on the banking sector,[1061] which has been reported widely. Recommendations will be made regarding this area to help restore and strengthen the banking industry. It should be appreciated that CRAs were not the only weak link in the chain of events leading to the financial crisis (also consider that banks contributed and that banks were languorous when constructing

[1061] Matt Krantz, '2008 Crisis Still Hangs Over Credit-Rating Firms' http://www.usatoday.com/story/money/business/2013/09/13/credit-rating-agencies-2008-financial-crisis-lehman/2759025/ accessed 10 February 2017.

their capital portfolio,[1062] as well as constructing securitised bond sales that inflated bond ratings[1063] for example. There are, in fact, many advocates for the theory put forward that banks were disingenuous when constructing securitised bonds.)[1064] Let it be clear that the author does not agree with the notion that CRAs should be eradicated, but rather over reliance reduced.[1065]

Regulation is the solution and will now be discussed.

Credit Rating Agencies - Regulation

It now beckons as to what has been done to limit the risks of CRAs by the Basel Committee and other policy makers. What can be observed since the recent recession is that CRAs should be better regulated and be held more accountable. The issues surrounding these problems among others have been discussed in Chapter 4, on this basis what needs to be considered here is what have the Basel Committee tried to do to rectify

[1062] Jill Treanor, 'Toxic Shock: How the Banking Industry Created a Global Crisis' *The Guardian* (London, 8 April 2008) https://www.theguardian.com/business/2008/apr/08/creditcrunch.banking accessed 10 February 2017.
[1063] Private meeting, Professor Andrew Haynes, 7 February 2017 University of Wolverhampton, Wolverhampton.
[1064] Thomas Adams, 'Is Blaming AAA Investors Wall-Street Serving PR?' http://www.nakedcapitalism.com/2009/12/is-blaming-aaa-investors-wall-street-serving-pr.html accessed 10 February 2017.
[1065] It was examined in Chapter 4 that one of the suggestions put forward to improve CRAs was to reduce the over reliance placed on CRAs, it was also suggested that another alternative to take would be to improve competition by creating a public credit rating agency. The author would state that both can be considered and although increasing competition may contradict reducing the importance placed on CRAs, the author proposes that both can be done, or one of the two can be done.

this problem and bearing in mind any reforms and proposals that are and have been taking place around the world.

Tighten regulation - What changes are taking place and have been suggested?

First and foremost, the IOSCO model. A voluntary code of practice by a voluntary body, that encourages self regulation. It is a broad set of practices that have been endorsed throughout the world, particularly the United States and the EU. It should be said that the big three adhered to the practices put forward by IOSCO when it began in 2003. The author would assert that the reason for doing so was to maintain dominance in the market and by adhering to the IOSCO code enables the big three to continue the oligopoly.

IOSCO was created before the financial crisis with a code of conduct fundamentals published in 2004.[1066] The date indicates that better regulation was required even before the financial crisis and thereafter. The fundamentals focused on practical measures and provided a framework for CRAs to implement the principles put forward and this would be on a macro basis.[1067] However, contemplating the IOSCO model shows that self regulation does not work. The fact that one of the worst

[1066] IOSCO, 'Code of Conduct Fundamentals for Credit Rating Agencies' http://www.iosco.org/library/pubdocs/pdf/IOSCOPD180.pdf accessed 6 January 2017.
[1067] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 73 quoting the FSA.

recessions in history took place several years after this model was published is the obvious argument. The problem with self regulation is that it is open to interpretation and alteration. Equally, it does not help when there are structural deficiencies within a rating agency.[1068] As EUROPA point out, 'Self-regulation based on voluntary compliance with the IOSCO code does not appear to offer an adequate, reliable solution to the structural deficiencies of the business'.[1069]

The model stated through the code aimed to deal with integrity, independence and transparency.[1070] The Committee of European Securities Regulators[1071] (CESR) published a paper shortly after the publication of the IOSCO code in which it stipulated several options to integrate the IOSCO code into European legislation;[1072] from full registration being the hardest approach to self regulation being the safest and easiest approach. The CESR chose the latter in what can only be viewed as conservative. The author would stipulate that this was to achieve a higher adoption rate of the IOSCO code. It could have also been

[1068] Ibid 88.
[1069] EUROPA, 'Proposal for a Regulation of the European Parliament and of the Council' http://ec.europa.eu/internal_market/securities/docs/agencies/proposal_en.pdf page 3 accessed 16 November 2017.
[1070] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 435.
[1071] CESR was an independent body in relation to European securities regulators. The body, or committee, would meet to discuss community legislation and coordination between securities regulators, for example.
[1072] CESR, 'CESR's Report to the European Commission on the Compliance of Credit Rating Agencies with the IOSCO Code' http://ec.europa.eu/finance/securities/docs/agencies/report_en.pdf accessed 6 January 2017.

because historically CRAs have operated this way[1073] as a result of CRAs being viewed as competent before the financial crisis, and that it would be difficult to enforce hard law i.e. statutory law to cover every aspect.

It can be argued that if the CESR had taken a sterner approach and endorsed the full registration option, then the IOSCO model and code of practices may have succeeded. Due to self regulation being promoted, the model was likely to fail and the financial crisis portrays this.

In light of the financial crisis the IOSCO model revised the code of practice in 2008[1074] and updated this to include acting responsible towards investors and issuers, to be more independent, and voice conflicts of interest among other topics.[1075] It changed from a macro set of regulations to micro set of regulations.[1076] In 2009, IOSCO conducted a report based on the recent updated code of practice and found that the big three adhered to all. This is due to the big three already having their own code of conduct and the IOSCO code of practice was easier to integrate.[1077] Smaller CRAs found it much harder to accommodate, the detectible reason being is that a code of conduct on the same level as the one concocted by IOSCO was not to the same extent.

[1073] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 72.
[1074] IOSCO, 'The Role of Credit Rating Agencies in Structured Finance Markets' http://www.iosco.org/library/pubdocs/pdf/IOSCOPD270.pdf accessed 6 January 2017.
[1075] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 435.
[1076] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 73.
[1077] Ibid 77.

The author argues that the IOSCO code fails on one glaringly obvious and rudimentary point that it is based on - self regulation - although it is good to observe that CRAs are being discussed as reform is needed and self regulation does not work.[1078] The author would state that a firmer stance needs to be taken, that regulation needs to be set in stone and self regulation should not be given as an option as this can lead to modification.

The IOSCO code has been criticised heavily for the reasons discussed and it is not surprising that it has been described as a toothless wonder[1079] as it cannot be enforced in any meaningful way. That said, it is a stepping stone nonetheless and can be improved further. This will be discussed in the recommendations subsection.

Secondly, the Financial Stability Forum[1080] (FSF), now the Financial Stability Board[1081] (FSB). In April 2008[1082] the forum suggested key improvements focusing on the quality of rating processes and the

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[1078] Philip Booth, 'Lessons from History Show Self-Regulation to be the Best Kind of Control' *The Telegraph* (London, 8 August 2010) https://www.telegraph.co.uk/finance/comment/7933318/Lessons-from-history-show-self-regulation-to-be-the-best-kind-of-control.html accessed 29 June 2018.
[1079] Frank Partnoy, 'Do Away with Rating-Sased Rules' *Financial Times* (London, 8 July 2008) http://www.ft.com/cms/s/0/2f2af9dc-4d5d-11dd-8143-000077b07658.html?ft_site=falcon&desktop=true#axzz4SL3BMk5r accessed 9 December 2016.
[1080] An international body that monitors and recommends on the global financial system.
[1081] Since 2009.
[1082] Financial Stability Forum, 'Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience' http://www.fsb.org/wp-content/uploads/r_0804.pdf?page_moved=1 accessed 6 January 2017.

assessment of underlying data quality by CRAs.[1083] Greater transparency[1084] was the biggest issue and it was recommended that transparency was needed in rating practices as well as the publication of historical data. The forum went on to state that investors should consider how they use the data put forward by CRAs, that supervisory authorities should evaluate their role in relation to CRAs, and that supervisory rules are aligned with investor objectives i.e. due diligence and over reliance on CRAs.

The suggestions put forward by the then FSF appears a better set of reform than the IOSCO model in that it works closely with national and regional initiatives[1085] in key economic areas. The IOSCO model, due to its lack of legal enforceability combined with its self regulation option, falls short of becoming a crucial aid to the regulation of CRAs. That said, in the author's opinion the IOSCO model is more far reaching and broad; consideration only needs to be given to the 2015 final report produced by IOSCO to realise the broadness of its capabilities such as broadening provision's scope to apply to all securities, or broaden the scope of CRAs

[1083] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 436.
[1084] See T Hurst, 'The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis' (2009) 30(2) Comp Law 61, 63.
[1085] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 436.

having to maintain a review function, or replacing analysts with employees to broaden the scope of accountability.[1086]

Thirdly, is the Securities Industry and Financial Markets Association[1087] (SIFMA). Like the FSF, SIFMA introduced recommendations so that CRAs can be better regulated.[1088] Some examples include clear disclosure of ratings, disclosure of results for due diligence, and working towards a global framework.[1089] Importantly, SIFMA encourages those involved, from legislators to regulators, to work more closely to accomplish the overall task of effective regulation of CRAs and the issues that were exposed during the financial crisis.

Fourthly, the Turner Review.[1090] The previous areas of reform have come from a United States and EU perspective, and it is worth briefly considering the United Kingdom and whether it has taken a similar approach. Rather than focusing primarily on CRAs, like IOSCO, FSF and SIFMA, the Turner Review considered CRAs along with other banking and financial matters in order to create a more stable banking system.

[1086] IOSCO, 'Code of Conduct Fundamental for Credit Rating Agencies: Final Report' https://www.iosco.org/library/pubdocs/pdf/IOSCOPD482.pdf page 11, 13 and 19 accessed 29 June 2018.
[1087] A group based in the United States in regard to capital markets. They represent securities firms and banks, etc.
[1088] SIFMA, 'Recommendations of SIFMA's Credit Rating Agency Task Force for the Credit Rating System' http://www.sifma.org/issues/item.aspx?id=21391 accessed 6 January 2017.
[1089] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 436.
[1090] Financial Services Authority, 'The Turner Review' http://www.fsa.gov.uk/pubs/other/turner_review.pdf accessed 6 January 2017.

Interestingly, the report did not highlight CRAs as having a huge impact on the financial crisis rather that three issues that became apparent from the financial crisis were macro economic imbalance, financial market securitised trading instruments, and deficiencies in capital and liquidity. That is not to say that CRAs did not play their part and evidently the Turner Review recognised that reform was needed which was alluded to in the key recommendations put forward.[1091] One of these was the registration and supervision of CRAs to enable better corporate governance whilst managing conflicts of interest.[1092] When considering the Turner Report in relation to the world stance on what should be done with CRAs, it can be viewed that the United Kingdom has taken a similar approach.

Fifthly, soft law approaches have been discussed up to this point. It is prudent to consider some hard law regulation such as the Dodd-Frank Wall Street Reform and Consumer Protection Act 2010.[1093] The Dodd-Frank Act is in response to the too big to fail notion that was so apparent leading to and during the financial crisis and endeavours to tackle many problematic areas ranging from consumer protection to corporate governance. The Dodd-Frank Act also explores how credit ratings and CRAs can be better maintained and tackled i.e. Title IX Subtitle C.[1094]

[1091] Ibid page 8 accessed 29 June 2018.
[1092] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 437.
[1093] Dodd-Frank Wall Street Reform and Consumer Protection Act 2010.
[1094] Ibid, Title IX Subtitle C Improvements to the Regulation of Credit Rating Agencies.

Under the aforementioned, a new framework was created to not only regulate but govern CRAs as well as NRSROs. Congress is of the opinion that ratings were inaccurate[1095] and the aforesaid Act endeavours to rectify this. Some of the areas that it looks to strengthen include governance, conflict of interest and transparency. The Act also encourages broader standards and the reduction of reliance placed on CRAs.

The Dodd-Frank Act is a noticeable improvement for United States regulation, although it is too early to gauge how successful it has been. This is, in part, due to the many powers and provisions it gives to SEC and that SEC have yet to complete certain elements of mandates put forward by the Act for SEC to complete.[1096] Nevertheless, it is a step in the right direction and other countries should follow suit. It should be acknowledged that in recent times there are plans to repeal large parts of the Dodd-Frank Act[1097] and this could have huge implications for the better governance of CRAs and other related banking regulation issues.

The final point to look at is what has the Basel Committee tried to do to tighten regulation in this area. Other than reversing the decision to

[1095] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 122.
[1096] Ibid 145.
[1097] Donna Borak, 'House Votes to Kill Dodd-Frank. Now What?' http://money.cnn.com/2017/06/08/news/economy/house-dodd-frank-repeal/index.html accessed 23 April 2018.

remove CRAs from the focal point of the Basel regulations,[1098] the author would argue that the Basel Committee have done very little by way of tightening regulation in this sphere.

Less emphasis on CRAs, reduction of importance given to CRAs and over reliance of such, limited use of CRAs - What changes are taking place and have been suggested?

The International Monetary Fund[1099] (IMF) has previously suggested that ratings given by CRAs have inadvertently affected and contributed to financial instability.[1100] Despite this, there appears to have been little done in respect of reducing the emphasis, the importance, and limiting the use of CRAs and the reports they publish. Consideration will be given to what changes have taken place or have been suggested.

Firstly, in the United States[1101] and the EU,[1102] some have suggested that a public credit rating agency should be devised. This does overlap with

[1098] Although they should not be removed entirely from existence, as they would be just replaced by identical entities. See H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 474

[1099] Consisting of many countries the IMF seeks to foster global monetary cooperation including financial security and international trade amongst other key aims.

[1100] John Kiff, 'IMF Survey: Reducing Role of Credit Ratings Would Aid Markets' http://www.imf.org/external/pubs/ft/survey/so/2010/RES092910A.htm accessed 16 December 2016.

[1101] M. Ahmed Diomande, James Heintz and Robert Pollin, 'Why US Financial Markets Need a Public Credit Rating Agency' http://www.peri.umass.edu/media/k2/attachments/Why_U_S_Financial_Markets_Need_a_Public_Credit_Rating_Agency.pdf accessed 6 January 2017.

[1102] Christian Scheinert, 'The Case for a European Credit Rating Agency' http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589865/EPRS_BRI(2016)589865_EN.pdf accessed 6 January 2017.

the next subsection on more competition, but it may help in that less emphasis will be on the big three and that a fourth key credit rating agency should be used. This will be further discussed in the recommendations section as it has not come to fruition yet and could be of great assistance.

Secondly, a common theme throughout the examination of CRAs has been the level of importance placed on them and not only from the Basel Committee. A consequence of this is that it has produced an over reliance of CRAs and the financial reports given, and the creation of a seal of quality.

It should be appreciated that there has been no evidence to suggest that a reduction in importance and emphasis placed on CRAs will happen. In fact and perhaps the reason to why this has not happened, is the argument that by improving and tightening regulation will actually encourage over reliance of CRAs [1103] and this will not reduce the importance given but actually increase the same. The reason being is that if regulation is improved and it is much tighter than before, then it is enforcing the quality of CRAs and the work being conducted. A suggestion put forward has been to remove attention from the credit rating itself and focus on regulating the agencies.[1104] If done, this would move the issue

[1103] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 450.
[1104] John Kiff, 'IMF Survey: Reducing Role of Credit Ratings Would Aid Markets' http://www.imf.org/external/pubs/ft/survey/so/2010/RES092910A.htm accessed 16 December 2016.

away from the level of emphasis and importance given to CRAs and push the matter into the sphere of tighter regulation which could provide a solution to combating how CRAs derive the ratings published.

Thirdly, and further to the opening comment of this subsection, the IMF have said that sovereign debt needs to be better managed; an issue highlighted in Chapter 4 by the author. This issue is not just by the ratings given but the over reliance of these ratings. More attention to detail should be assigned to the rating tasks stated by the IMF. Whilst this is comprehendible it is still with contemplation on how this would be done. In general, over reliance can be combatted by several solutions such as better analysis by users, authorities being more aware of adverse consequences, and policy makers accepting that smaller investors will rely heavily on CRAs. This may help the second point commented earlier in that the financial reports given by CRAs are seen as a seal of quality.

What can be extracted from the above is that suggestions have been made but no solid policies have been acquired or put forward. Stronger action needs to be taken so that banking regulation is better supported.

<u>More competition - What changes are taking place and have been suggested?</u>

It can be said that more competition would help with the use of CRAs. If there were more prominent players than the big three then this would

disband the current oligopoly and produce better competition. Whilst this may go against the idea of reducing the importance placed on CRAs in the last subsection; either take the approach of reducing the over reliance of CRAs or take the approach of creating more competition rather than relying on the current system. It is suggested that there is no problem in trying both or focusing on one.

Firstly, the notion of a public credit rating agency. It has been suggested in the United States and highlighted in the previous subsection that a public credit rating agency would help,[1105] especially in respect of the current issuer pays model.[1106] It would also provide more competition to the big three in that whilst smaller CRAs have little impact in affecting competition, a public credit rating agency would have a more sizeable form factor in that it would be a public body and have the resources to fully compete with the big three. However, it should be noted that there has been some opposition in recent times from an EU perspective in that it is deemed to add little value,[1107] even though it was considered positively in 2010.[1108] The author would suggest that one of the reasons

[1105] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 449.
[1106] See DH Fischer, 'The European Rating Fund' (2018) 26(1) JFRC 72 for a discussion around the creation of a European Rating Fund which would act as a middle person between CRAs and the issuer.
[1107] See European Commission, 'COM/2016/0664 Final' http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1476967405955&uri=COM:2016:664:FIN accessed 16 December 2016 in regards to the appropriateness and feasibility of supporting a European credit rating agency.
[1108] Aline van Duyne, 'Reform of Rating Agencies Poses Dilemma' *Financial Times* (New York, 10 June 2010) http://www.ft.com/cms/s/0/5616f5ce-74f6-11df-aed7-00144feabdc0.html?ft_site=falcon&desktop=true#axzz4T0QyvQMw accessed 16 December 2016.

for this change of opinion was due to political and economic factors. For example, the revenues it can produce are not only beneficial for the CRAs but also the countries in which they operate. So, less emphasis on the use of CRAs could hinder this revenue stream.

Additionally, due to the potential scale of a public credit rating agency, it would be able to jump right in to tackling the competition issue (whilst there are over one hundred and fifty smaller CRAs, there is little impact due to size and scope) that has faced this area some time. It would not have to build a reputation or struggle to find funds to survive and compete as it would have a large investor to support from the beginning i.e. the tax payer. The only potential problem with a public rating agency as Haynes puts it, is that it could suffer from potential political pressure[1109] and this could affect and be affected by one country to another. This has been seen in the past when French based Fitch did not downgrade French government debt when the other two big agencies did.[1110]

Secondly, it has been suggested that more reform needs to take place due to competition issues not being addressed.[1111] Further regulatory

[1109] Private meeting, Professor Andrew Haynes, 27 June 2018 University of Wolverhampton, Wolverhampton.
[1110] Ibid. See, for example, Jonathan Russel, 'France Stripped of Prized 'AAA' Credit Rating by Moody's' *The Telegraph* (London, 19 November 2012) https://www.telegraph.co.uk/finance/financialcrisis/9689457/France-stripped-of-prized-AAA-credit-rating-by-Moodys.html accessed 17 September 2018.
[1111] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 450.

changes need to be put forward and implemented in order for smaller firms to tackle the big three and this could be enforced through regulatory mechanisms. Although, there has been little by way of recommendations to support how this could be accomplished.

Thirdly, the European Commission have stipulated that CRAs should disclose the information on ratings given and how they are based in order to increase competition, similar to the SEC 17g-5 rule.[1112] Again, this is merely a recommendation and carries little weight. For further influence and from an EU perspective, a directive should be put forward to enforce a disclosure of information by CRAs and only then will this recommendation carry more weight.

From what has been discussed there has been little by way of significant improvement to increase competition. It would seem that the best solution for the immediate future is to create a public credit rating agency. This would allow an immediate response to competition issues. This will be discussed in the recommendations section.

[1112] Aline van Duyne, 'Reform of Rating Agencies Poses Dilemma' *Financial Times* (New York, 10 June 2010) http://www.ft.com/cms/s/0/5616f5ce-74f6-11df-aed7-00144feabdc0.html?ft_site=falcon&desktop=true#axzz4T0QyvQMw accessed 16 December 2016.

More accountability - What changes are taking place and have been suggested?

It would seem logical that regulation and accountability go hand in hand. As Lowry and Reisberg purport, 'As CRAs become more and more regulated will that also mean they will be more accountable for their decisions in terms of liability?'.[1113] Consideration will be given to what is currently being deliberated in respect of accountability[1114] and how that fits into the area of regulation because to state that accountability can be included in regulation is a tougher task than initially thought. This is because whilst CRAs provide reports and ratings on the creditworthiness of banks, they are only deemed to be providing opinions and not advice or recommendations.

The only point to focus on here is the debate of whether CRAs provide opinions or whether they give advice. It is widely accepted that CRAs provide opinions[1115] but that does and should not mean it is a barrier to responsibility and liability, as Lowry and Reisberg note.[1116] The problem that develops from here is that if committees such as IOSCO and the European Commission accept that CRAs give opinions, then this has

[1113] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 442.
[1114] See DH Fischer, 'The European Rating Fund' (2018) 26(1) JFRC 72 for alternative position on accountability and the proposal of a European Rating Fund.
[1115] See T Hurst, 'The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis' (2009) 30(2) Comp Law 61.
[1116] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 442.

created a form of belief that due to no advice and recommendation being provided CRAs should not be held accountable. This is particularly prevalent in the United States in which CRAs are protected under the First Amendment of the Constitution, freedom of press, and as such CRAs are viewed as giving an opinion in a journalistic capacity.[1117] It should be noted that this was disputed in late 2009, but the case was later settled in 2013.[1118] The difference between the United States and the EU seems to be one of ideological and traditional reasoning. The viewpoint from the United States stems from the Constitution and therefore dates back many years and this cannot be replicated from an EU perspective. Contrary to this, the notion of freedom of press is disputed in the EU and the idea behind this is that CRAs provide an investment grade which enables one to invest or not. The argument here, and consequently opposing the freedom of press and opinion notion displayed in the United States, is that press articles are opinions on public matter, whereas credit ratings are given so that investors can rely on them for accuracy when they are unable to do so personally. On this basis, CRAs should be held accountable for their ratings. In the United Kingdom for example, consideration can be given to *Caparo Industries plc v Dickman [1990];*[1119] the judgment being that the defendants were not liable for producing

[1117] H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 85.
[1118] Patricia Hurtado and Bob van Voris, 'Morgan Stanley Settles Washington, Abu Dhabi Lawsuits' https://www.bloomberg.com/news/articles/2013-04-26/morgan-stanley-settles-washington-abu-dhabi-lawuits accessed 6 January 2017.
[1119] *Caparo Industries plc v Dickman [1990] 2 AC 605.*

statements that the plaintiff relied on. This can be applied to CRAs and credit ratings.

Already it is clear to see that on trying to create accountability for CRAs is not an easy task. The comparison between the United States and the EU illustrates this point. Yet surely it must be a matter of when, not if, accountability will seep into regulation, especially in the aftermath of the financial crisis.

Since the financial crisis there has been some interesting developments. In the United States over the space of several months in 2011, for example, three key moments occurred. The big three CRAs won a court case against Lehman Brothers whom held CRAs responsible for their demise, SEC issued a no-issue letter exempting CRAs from liability, then later that year legislation was repealed which pertained to CRAs being liable to lawsuit exposure if it so arises.[1120] This area is somewhat convoluted and there needs to be more uniformity in order to provide solid practices that can be used to govern CRAs as they should be.

In summary the view in the United States is still one that favours CRAs and no liability, resulting in no accountability. In contrast to the United States the EU has taken a different approach and a non-legislative resolution was put forward detailing the ways in which CRAs are

[1120] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 447.

accountable for the ratings they give and should be held liable under civil law. The resolution went further to state that ESMA should be allowed to perform ad hoc checks and that there should also be the creation of a European credit rating agency.[1121] It was stated in a recent paper from the European Commission in 2016 that there would not be a credit rating agency servicing the EU. Although, it would be naive not to explore this option and this decision could change over time.

What appears to be happening is that there is disparity between the United States and the EU. Whilst one is reinforcing traditional views, the other is proposing new reform. Solidarity and uniformity need to prevail here and will be discussed in the recommendations subsection. Perhaps what the underlying issue here is not one of opinion or advice, it is accountability and holding CRAs more accountable.

Weaknesses

Firstly, there needs to be tighter regulation. There were several points covered under this subsection, namely the IOSCO model and code of practice, FSF, SIFMA, the Turner Review, and what the Basel Committee have done or suggested. There are two key weaknesses that are noticeable from the material illustrated. Firstly, the IOSCO code, and secondly the Basel Committee. The weakness of the IOSCO code is that

[1121] Ibid 447.

it lacks enforceability[1122] and the option of self regulation. Whilst IOSCO focused on integrity, independence and transparency, there was a clear oversight of enforceability.[1123] There is also much more work to be done in order for smaller CRAs to adhere to the codes of practice. Additionally, sanctions cannot realistically be implemented as the IOSCO code is soft law by nature, thus allowing the big three to continue even when they may have breached their own code of conduct or that of the IOSCO code of practice.[1124] Cleverly the big three have included an exclusion clause which limits responsibility and liability.[1125] The second weakness is that the Basel Committee have done very little to regulate CRAs since the financial crisis. Thus, what needs to occur is a revision of the Basel regulations and how it can facilitate better regulation of CRAs going forward.

Secondly, less emphasis on CRAs, reduction of importance given to CRAs and over reliance of such, and limited use of CRAs. The weaknesses that still persist from the changes that have taken place and the suggestions put forward is that the Basel regulations should reduce importance given to CRAs and that the creation of a public credit rating agency would help reduce the importance given to the big three, although, the amendment would still continue with the theme of CRAs having significant influence.

[1122] If the IOSCO code was in some way hard law, then the codes in which it promotes may create wider adoption and incorporation.
[1123] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 435.
[1124] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 86.
[1125] Ibid 87.

The weaknesses of the aforementioned is that due to the Basel Committee not taking a strong stance on the regulation of CRAs will mean the continuation of importance given and over reliance of CRAs, and the discussion(s) of a public rating agency has not materialised. This may be due to political issues, however as Fischer puts it, 'The public CRA could prevent any herding tendency because of its public backing and thus independence from the market'.[1126]

Thirdly, there needs to be more competition. The weakness here is that there has not been any meaningful change since the financial crisis, other than suggestions ranging from a public credit rating agency to regulatory change that will allow for smaller CRAs to compete with the big three. Due to the lack of policy change the main point to take from the material highlighted would be to discuss the creation of a public credit rating agency[1127] as this may solves issues such as the current oligopoly. This will be considered shortly.

Fourthly, there needs to be more accountability. It has been suggested that CRAs should be accountable for decisions made.[1128] The underlying problem that was discussed concerned the different views that countries have as to whether CRAs provide an opinion or advice. It was explained

[1126] DH Fischer, 'The European Rating Fund' (2018) 26(1) JFRC 72, 76.
[1127] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 449.
[1128] Jamie Dunkley, 'Rating Agencies 'Must be Independent'' *The Telegraph* (London, 10 February 2012) https://www.telegraph.co.uk/finance/newsbysector/banksandfinance/9074991/Rating-agencies-must-be-independent.html accessed 11 July 2018.

that the United States have taken a difference approach to the EU in that CRAs are seen as giving an opinion compared to the EU perspective and one of advice. The issue here is that there are many establishments that consider CRAs as giving opinions rather than advice, such as the IOSCO Committee and the EU Commission.[1129] Adding to this is that CRAs are not considered to be giving advice under the definition and meaning put forward by the Directive on Insider Dealing and Market Manipulation, or the Directive on Market Instruments[1130] and this complicates the problem further in the sense that if leading committees and key directives are stating that CRAs are giving an opinion, then the argument that CRAs are giving advice is harder to contend. This will hinder the progress in the pursuit of making CRAs more accountable.

The fact is that policy and law in this area has not changed much since the financial crisis. There needs to be solidarity and uniformity between the varying notions regarding what CRAs purport when providing a financial report i.e. opinion or advice. The author would stipulate that if a blanket agreement across the world was given and that CRAs offer advice not opinions, then this would make it easier for CRAs to be more accountable and liable to penalties and sanctions.[1131] CRAs could be held

[1129] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 442.
[1130] Ibid 442-443.
[1131] Private email, Professor Andrew Haynes, 10 December 2018. Haynes suggests that financial penalties may prove difficult as it would most likely bankrupt CRAs. Whilst this is a possibility, a level of accountability does not need to be in the form of financial penalisation, it could be, for example, a restriction on trade or ban for a period of time. The

liable for inaccurate ratings,[1132] although due diligence is very much required. Furthermore, even if the general consensus is that CRAs give an opinion then why should this exclude any form of accountability? The response is that it should not, especially when repercussions can be huge. It is in the author's opinion that CRAs should be held more accountable.

The following points will now be discussed in the recommendations subsection on what the author deems to be the most important in order to enhance CRAs and limit those risks and shortcomings. These consist of the IOSCO model and code of practice, the Basel Committee and the Basel regulations, the creation of a public credit rating agency, and solidarity and uniformity on the issue as to whether CRAs provide an opinion or advice.

Recommendations

Material has been put forward and the main risks and shortcomings were highlighted in Chapter 4 and narrowed further in this chapter, Chapter 5. There are still weaknesses, some new and some old that exist due to no changes being made or from policy changes or suggestions put forward that have not improved this area. Rather than discussing all the risks

most important element is to promote a level of accountability in a way that acts as a deterrent.

[1132] R W Kolb, 'Credit Rating Organizations, Their Role in the Current Calamity, and the Future Prospects for Reform' in T J Fitzpatrick IV and C Sagers, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010) 380.

stipulated, the following four areas that the author believes will strengthen CRAs the most, and will provide greater stability and prosperity, will be put forward.

Firstly, the IOSCO model which fell under the subsection tighter regulation. It was explained how the IOSCO model is a voluntary code of practice. As such, it does not possess any legal power to enforce,[1133] only to recommend best practice. The model began before the financial crisis and has developed since that point. The code encourages integrity, independence and transparency, and was published with the general ethos of self regulation. The code was assessed shortly after it was published in 2004 by CESR.[1134] CESR stated that there were several options that could take place for it to be integrated into European law, from full registration to self regulation. The latter was chosen. It is arguable that the CESR were very cautious at this point on the basis that they wanted to observe to what extent IOSCO would be incorporated.

In 2008 in the midst of the financial crisis, IOSCO updated and revised the code of practice put forward several years earlier. There was a key focus on responsibility towards investors and issuers, to be more independent, and to voice conflicts of interest amongst other areas. A survey conducted shortly after the revision of the IOSCO code found that

[1133] Werner Bijkerk, 'Enforcement Cooperation' https://www.iosco.org/research/pdf/Enforcement-Cooperation-in-IOSCO.pdf page 8 accessed 6 January 2017.
[1134] J Lowry and A Reisberg, *Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012) 435.

the big three complied, but smaller entities were struggling to do so. From a European perspective, the CESR should have chosen to recommend full registration rather than self regulation. Equally, the other issue is that IOSCO is a voluntary body.

In order to improve the code endorsed by IOSCO and thus improve CRAs, enforceability should be considered. Whilst it would not be feasible to make the IOSCO model and code of practice compulsory, as this would be too difficult a task to enforce around the world, there should be support given by leading authorities and governments to incorporate the code into domestic law, like the Basel Committee. Therefore, the recommendation for tighter regulation would be to have authorities such as the EU to incorporate the IOSCO model into European law. This would allow for more authority and influence, and in turn this would improve CRAs. What will hopefully aid full implementation of IOSCO is the 2020 strategic plan that was released in 2015,[1135] which outlined the future plans, objectives and initiatives. This should increase the adoption of the code of practice endorsed, but only time will tell. If such changes occur, then this may help in delivering sanctions as at present it is hard to do so due to IOSCO being soft law and the big three occupying such a large portion of the market. Furthermore, sanctions would improve what is currently a very weak aspect of the IOSCO model from a United States

[1135] IOSCO, 'IOSCO's Strategic Direction 2015 to 2020' https://www.iosco.org/library/pubdocs/pdf/IOSCOPD496.pdf accessed 6 January 2017.

and EU perspective. For example, India and Singapore take a stronger stance and impose penalties, suspensions and in some instances revoke trading licences.[1136] This would be a more sensible route to take in the author's opinion as it would set a clear boundary in which CRAs should not pass, if they do so then there will be consequences. If such measures are in place worldwide then the author is of the opinion that CRAs are more likely to conform to safer practices.[1137]

Secondly, the Basel Committee and Basel regulations. This risk is in relation to subsections tighter regulation as well as less emphasis on CRAs, reduction of importance and over reliance, and limited use of CRAs. The Basel Committee has done very little by way of tightening regulation as well as reducing the importance and over reliance placed on CRAs through the Basel regulations. Langohr and Langohr highlight this problem and note, '…the excessive reliance on ratings created and maintained opaqueness between the ratings and investors'.[1138] The problems that result from such is that independence and competition are affected.[1139]

The author strongly believes and recommends that one of the best ways to tackle the issues discussed throughout the research and improve CRAs

[1136] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 89.
[1137] It should be recognised that in Chapter 4 penalities and liability was discussed. Whilst liability may prove difficult, the penalties can be non monetary such as a short ban or the revocation of a trading licence.
[1138] H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 469.
[1139] Ibid.

is to spearhead the change through the Basel regulations. After all, the Basel regulations are implemented throughout the world and adhered to in varying degrees in many countries. Therefore, by either tightening regulation on how CRAs are used or the limiting of such through the Basel regulations, could have a positive impact for the banking world and regulation. The Basel Committee should take a bold decision to change the current system otherwise it is only a matter of time before repercussions are seen again.[1140]

Thirdly, the creation of a public credit rating agency. This was in relation to less emphasis on CRAs, reduction of importance and over reliance, and limited use of CRAs as well as more competition. However, the author will discuss in relation to the latter as it is more important due to the current oligopoly that still exists.[1141] The concentration of CRAs needs to be broke and a public credit rating agency could be the answer. As Blundell-Wignall comments in relation to CRAs, '…you need to break the oligopoly…'.[1142] Langohr and Langohr further state, 'This can only happen if the regulators level the playing field as much as possible'.[1143]

[1140] See Alison Moodie, 'Credit Rating Agencies are Miscalculating Risks of Climate Change, Reports Find' *The Guardian* (London, 25 June 2015) https://www.theguardian.com/sustainable-business/2015/jun/25/credit-rating-agencies-risks-climate-change-report-finance accessed 17 September 2018.

[1141] Daily Sabah, 'Credit Rating Agency Sector Needs More Competition, Experts Say' http://www.dailysabah.com/economy/2016/08/05/credit-rating-agency-sector-needs-more-competition-experts-say accessed 6 January 2017.

[1142] Parliament, 'Sovereign Credit Ratings: Shooting the Messenger? https://www.parliament.uk/documents/lords-committees/eu-sub-com-a/Creditrating/CRA%20Corrected%20and%20Evidence%20Final.pdf page 60 Adrian Blundell-Wignall accessed 29 June 2018.

[1143] H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 469.

It has been commented on how the big three have dominated the credit rating industry for many years and occupy most of the market, making it harder for smaller agencies to enter and compete thus restricting choice. The suggestion put forward from the United States and which was also debated in the EU, is to create a fourth credit rating agency that could rival the big three in size and resource, a public credit rating agency; Fischer believes that a public agency could prove beneficial.[1144] Unless there is significant change by the Basel Committee through the Basel regulations to limit the use of CRAs or to tighten regulation, then in addition to this another solution would be to create a fourth rating agency not only to circumvent the problem of competition in which it is being discussed now, but to instil the notion that authorities and regulatory bodies are taking this seriously and that a public entity will be assisting in such an important matter. It would break the mold of the big three, provide reassurance that it will (being a public entity) put investors and the economical world first, not guided by profit, and that changes are happening to improve this troubled area. There is wide support for this alternative due to two big factors, non profit driven and non incentive based.[1145] The end product is increasing competition.[1146]

[1144] DH Fischer, 'The European Rating Fund' (2018) 26(1) JFRC 72, 76.
[1145] Peter Bofinger, 'Public Sector Credit Rating Agencies = More Stable Financial Architecture' http://ss.rrojasdatabank.info/globalecon7.pdf page 35 accessed 6 January 2017.
[1146] Andrew Willis, 'Merkel Backs Creation of European Credit Rating Agency' https://euobserver.com/economic/30001 accessed 10 February.

The author acknowledges that whilst the current CRAs have an almost identical rating system,[1147] and that a public credit rating agency may be affected by political issues and possess controversial characteristics from other CRAs,[1148] the author would still argue that a public credit rating agency could be highly beneficial. The main argument being in relation to more competition and the assumption that being a public entity, is that it would operate in a different manner to the big three due to the nature in which it was created, therefore it could potentially break up the current oligopoly.[1149] It has also been suggested that a United Nations style credit rating agency could work.[1150] There are supporters and advocates for this notion that expressed positivism for a public credit rating agency.[1151] Furthermore, there would also be an argument that a public entity would operate more ethically, although this is hard to justify based on assumption alone. Evidently, this would be a better solution compared with the idea put forward for CRAs to be abolished as they would just be replaced with similar agencies.[1152] Whilst it may be argued that a public credit rating agency would not have much impact, or that it would

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[1147] Private meeting, Professor Andrew Haynes, 7 February 2017 University of Wolverhampton, Wolverhampton.
[1148] Ibid, 27 June 2018 University of Wolverhampton, Wolverhampton.
[1149] Aditya Chakrabortty, 'Time to Take Control of the Credit Rating Agencies' *The Guardian* (London, 16 January 2012) https://www.theguardian.com/commentisfree/2012/jan/16/time-control-credit-ratings-agencies accessed 10 February 2017.
[1150] Ibid.
[1151] Susan Schroeder, 'The Case for Public Credit Rating Agencies' https://www.worldeconomicsassociation.org/newsletterarticles/public-credit-rating-agencies/ accessed 10 February 2017.
[1152] H Langohr and P Langohr, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work, and Why They are Relevant* (John Wiley and Sons Ltd 2009) 474.

succumb to current criticisms,[1153] the author would state that there is support for the introduction of a public body.[1154]

Fourthly, the issue of solidarity and uniformity in agreeing on the notion of whether CRAs offer opinions or advice. This was in relation to more accountability which is still highly prevalent many years after the financial crisis.[1155] It was discussed earlier that more accountability is harder to incorporate than initially thought. There is one glaring reason as to why this is, and that is a difference of opinion as to whether CRAs are giving an opinion or giving advice. In the United States it is the former whilst the EU is the latter. The author believes that the EU stance is more appropriate in that CRAs are providing an investment grade which enables an investor to invest or not, and if the rating was negligently rated too high, for example, the losses could be exponential. The argument put forward is that upon a credit rating being given, investors will then rely on the accuracy of those ratings. Furthermore, investors may be unable to collate those results themselves thus relying on the accuracy of CRAs. Whereas the freedom of press and opinion stance taken in the United States would argue that CRAs are merely giving opinions on public matter, the former is more appropriate as it would enable penalties and sanctions to enter the rules and regulations of

[1153] Private email, Professor Andrew Haynes, 10 December 2018.
[1154] Ibid. Haynes suggests that a merging of current CRAs could create more competition. However, whilst this may be an option, the author would stipulate that the better method to take is that of a public CRA for the reasons stated above.
[1155] Narendra Nathan, 'How to Make Credit Rating Agencies More Responsible' http://blogs.economictimes.indiatimes.com/counter-point/how-to-make-credit-rating-agencies-more-responsible/ accessed 6 January 2017.

domestic law across the world. Currently, CRAs rely on the opinion approach based in the United States.

The recommendation put forward would be to take the EU standpoint and create a level of accountability. This should deter CRAs from operating incorrectly or negligently, and it would also provide the foundation for policy to be made on what penalties[1156] could be given on areas such as conflicts of interest. The hurdle that needs to be overcome is that of solidarity and uniformity.

Accountability in general terms and putting aside the argument of opinion or advice, has started to take shape in India by the Securities and Exchange Board of India which have stated that CRAs should be held more accountable.[1157] This is specific to India, but steps can be taken by other leading authorities around the world to take a tougher stance on CRAs. In fact, developments in the United States would suggest that a stronger stance toward CRAs is being conducted[1158] despite the opinion argument discussed, but the true results are yet to be seen.

[1156] Private email, Professor Andrew Haynes, 10 December 2018. As stated earlier, there may be a problem enforcing penalties through liability but it does not have to be in the form of monetary penalisation.
[1157] ENS Economic Bureau, 'SEBI to Tighten Norms for Credit Rating Agencies' http://indianexpress.com/article/business/economy/sebi-to-tighten-norms-for-credit-rating-agencies-2828178/ accessed 6 January 2017.
[1158] Roel Campus, 'Government Shows its Teeth to Credit Rating Agencies' http://thehill.com/blogs/congress-blog/economy-budget/231923-government-shows-its-teeth-to-credit-rating-agencies accessed 6 January 2017.

In summary, the author would recommend inserting a passage in the Basel regulations stating that CRAs provide advice and can be held accountable, or something less opinionated and direct and to state that it is up to the individual country to apply sanctions and penalties for issues surrounding accountability resulting from conflicts of interest and negligence. Additionally, another option would be for countries to create their own sanctions and penalties through domestic law similar to India, but this may take a long time to accomplish. The most appropriate way for it to become widespread resulting in uniformity and solidarity across the world in a faster timescale would be through the Basel regulations as it already operates in many countries.

The only potential issue with the recommendation suggested is the adoption of such a clause and that the Basel Committee will want to remain neutral. However, this would be the best form of action to take in trying to achieve a general consensus on CRAs providing advice, or more specifically having penalties and sanctions in place that deter CRAs from such practices.

In the end CRAs need to be more accountable for their actions. The author believes that if all countries share the same idea that CRAs give advice then this would enable penalties and sanctions to be easily created. If it remains that solidarity and uniformity cannot prevail on this issue then the next best option would be to collectively agree that CRAs should be held more accountable. Only then will this deter negligent actions, reduce

conflicts of interest, promote safer and sensible practices and reduce other problematic areas.

Conclusion

The main focal point for CRAs under the research has been geared towards regulation encompassing tighter regulation, less emphasis on CRAs, more competition, reduction of importance given to CRAs and the over reliance of such, limited use of CRAs and more accountability. These were the solutions highlighted throughout Chapter 4 which came from the four weaknesses of CRAs discussed, which were high concentration, over reliance, poor rating mechanisms for sovereign debt, and conflicts of interest.

This section endeavoured to further narrow these issues and as such they were put under the heading of regulation as the best way to tackle the risks and shortcomings posed by CRAs. What should be noted is that whilst regulation has been introduced, the reason why it has not been successful is due to the fact that regulation is still yet to provide a solution and remedy to several problems including accountability, conflict of interest and competition; this is a fact and academically agreed with.[1159]

[1159] M Hemraj, *Credit Rating Agencies* (Springer International Publishing 2015) 245.

Whilst highlighting those weaknesses it was further explored as to whether there had been any policy changes or suggestions put forward to combat the inadequacies listed, whether it be hard or soft law. Unlike the previous section on capital ratios there has been little by way of policy and change in the law. For that reason and for conformity with the section on capital ratios, recommendations were given on those risks and shortcomings that are still very much prevalent.

In the end, the four recommendations stipulated by the author were the IOSCO code being further developed, more involvement from the Basel Committee through the Basel regulations, the creation of a public credit rating agency, and solidarity and uniformity on the issue of whether CRAs give an opinion or advice. It was concluded that the four aforementioned points can improve CRAs to strengthen this fragile area of banking regulation. If the four recommendations are considered and put into practice i.e. the IOSCO code implemented through EU law, the Basel Committee taking a stronger approach through the channel of the Basel regulations, creation of a public credit rating agency, and solidarity and uniformity on the issue of CRAs offering advice not an opinion, then positive steps can be taken and regulation of CRAs will be in a much better place. Only then will this risk and shortcoming be improved.

VALUE-AT-RISK

The third risk and shortcoming is VaR. A complex risk measuring tool that has many faults yet still widely used. At the beginning of Chapter 5 the main issues in relation to VaR were analysed, it was also specified as to what improvements were needed for VaR to become more effective. The issues considered were the inability to cope with volatile markets, VaR struggles with complex products, over reliance, VaR applied incorrectly, and the three commonly used approaches to calculating risk i.e. Analytical Variance/Covariance Approach, Historical Simulation Approach, Monte Carlo Simulation Approach. All of these points will be examined as to how they can be improved. Some of these points will overlap and will be merged to form a more concise approach in tackling VaR and how best to improve those inadequacies. Ergo, the main talking points and suggested solutions will form under two headings. First, the use of several models and approaches which will encompass inability to cope with volatile markets, computing complex models, over reliance, and the three conventional approaches. Second, regulation which will encompass VaR being applied incorrectly.

By acknowledging the VaR issues identified, recommendations will be put forward covering the main issues and how tackling this area could improve the banking sector.

Value-at-Risk - A brief recap

It is wise to start with the following statement that encapsulates what risk measuring tools should do (emphasis on should), Crouhy et al. state, 'The many dimensions of risk require a range of complimentary risk metrics, and always have done'.[1160] VaR is a risk measuring tool that helps facilitate banks to calculate risk in their portfolio, therefore, it is a tool to assess a bank's exposure to risk. VaR is promoted through the Basel regulations and is widely used.[1161] To provide further clarity, it can be defined as, '…the worst loss that might be expected from holding a security or portfolio over a given period of time…given a specific level of probability…'.[1162] With this in mind, the creation of VaR will be briefly considered.

Prior to VaR one of the main approaches to calculating and measuring risk was the Nominal Amount Approach. A simple formula that would assess the quantity of market risk in relation to a bank's trading desk. The problem with this approach was that it did not account for assets having different price volatilities and it did not differentiate between short and long term positions. As well as the Nominal Amount Approach there has been other risk measuring tools such as the Modern Portfolio Theory

[1160] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 263.
[1161] The ways in which this is done (calculations and formula) will not be discussed as it has already been covered in Chapter 4.
[1162] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 239.

and the regulatory measures put in place by SEC in the 1980s. None of these have come close to the prominence of VaR.

The rise of VaR began in 1994 and can be linked with J. P. Morgan Investment Bank where the department of RiskMetrics produced a daily report detailing the bank's risk. The finer details have been explained in Chapter 4, needless to say that the birth of VaR was at this point in time, even though it was in some form in other risk measuring tools prior to 1994.

To cement its position as the leading risk measuring tool, the Basel Committee inserted VaR into the Basel regulations during the late 1990s through the Market Risk Amendment and it was used as the standard practice tool in measuring and reporting market risk; it has evolved over time to also include credit risk. The Market Risk Amendment was created to assist banks with foreign exchange and trade debt securities, and VaR was incorporated to help banks assess their market risk capital requirements. This would be the starting point for complete domination.

Despite the flaws of VaR it is still widely used as the key performance indicator for measuring risk. One of the main reasons is that it has been around for many years and has evolved since the inclusion in the Basel regulations. It is due to theoretical properties, ease of back testing and best balance compared to other risk measuring tools, and because of this

it is easy to comprehend why VaR is the most prominent risk tool. After all, it has been stated to underpin most risk models.[1163]

VaR has become so popular because it is an extremely useful tool in measuring risk during normal market conditions. It can be used to calculate the overall market risk for a bank and it does this whilst capturing key moments such as volatility, curve and basis risk. The problem arises with stressed non-stationary events which VaR struggles to calculate.

It has been explained that the foundation of VaR is based on stationary events i.e. any volatilities are stationary. The Basel Committee tried to rectify this problem in Basel II.5 with SVaR, although it did little to circumvent this problem due to several factors such as it being a large computational task, structural challenges with products introduced after a stressed period whereby no historical data was available, some commentators arguing that by adding SVaR in addition to VaR double counted risk, and that it did not encourage banks to develop their own VaR models.

Furthermore, there are some inherent problems that have plagued VaR for many years and include issues such as that volatility may not be

[1163] J Danielsson, *Financial Risk Forecasting* (John Wiley & Sons Ltd 2011) 76.

constant,[1164] and it assumes the economic world progresses in small steps.[1165] The first inherent problem is volatility. VaR assumes that volatility is constant over time, therefore past variations are given the same weighting and importance to present times and potential variations. The problem is that past events do not truly reflect nor do they predict the events that may take place in the future. If a bank continues to operate on such protocol then the repercussions can be huge. Additionally, evidence has indicated that during the financial crisis during high periods of volatility, complex approaches to calculating VaR resulted in higher capital requirements, yet after the period of volatility the capital requirement decreased rapidly compared with an increase in simpler models.[1166] This created two different forms of behaviour and results have shown that the methods for calculating are somewhat inefficient. The second problem is how VaR assumes the economic world progresses at a slow pace with small movements in prices and structural changes. A problem remains dormant until a situation arises when seismic events happen at which point VaR becomes almost useless. Events such as the terrorist attack on the United States twin towers, or the recent financial crisis reflect this assertion.

[1164] Gregory P Hopper, 'Value at Risk: A New Methodology for Measuring Portfolio Risk' http://people.stern.nyu.edu/igiddy/valueatrisk.htm accessed 17 May 2017.
[1165] NYU Stern School of Business, 'Value at Risk (VAR)' http://people.stern.nyu.edu/adamodar/pdfiles/papers/VAR.pdf page 21-23 accessed 17 May 2017.
[1166] A Burchi, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284, 300.

Whilst on the whole VaR is a good mechanism for predicting market risk, it does not do so well when a financial crisis develops. This is because VaR assumes the market in which the economy trades in is stationary and when this becomes unstable, so does VaR.[1167] The next subsection will consider the two focal points highlighted at the beginning of this section in order to improve VaR - the use of several models and approaches and regulation.

Value-at-Risk - The use of several models and approaches and regulation

What became apparent from the material discussed about VaR in Chapter 4 was that there were several risks and shortcomings. Interestingly, there were two points ascertained from these findings in how VaR could be improved. The author suggested the implementation of using several models and approaches that encompass several areas of risk, and regulation which also encompasses several areas of risk. What will be discussed now is what changes have taken place and what has been suggested but has not come to any realisation.

[1167] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 234.

The use of several models and approaches - What changes are taking place and have been suggested?

Currently there are several models and approaches used under the auspice of VaR when calculating risk. In terms of risk models there are many, some of the main ones include internal rating based models seen in a bank's banking book, VaR and SVaR in a banks trading book, CVA VaR which covers counterparty risk, or OpVaR which covers operational risk. In terms of approaches to calculating risk the primary and conventional ones include the Analytical Variance/Covariance Approach, Historical Simulation Approach, and Monte Carlo Simulation Approach. There are other approaches but the research has focused on the conventional ones used due to them being widely utilised.

The solution of using several models and approaches was put forward in Chapter 4 and should help with issues such as inability of VaR to cope with volatile markets, computing complex products, over reliance, and the weaknesses of the three conventional approaches. The main solution to rectify these problems is straightforward and one which can be achieved with the use of several models and approaches rather than using one of each. This way a weakness in one model or approach could be alleviated with the use of another. This is the overwhelming conclusion that the author of the research has procured. Therefore, this subsection will consider what changes have taken or are taking place, as well as recommendations suggested in relation to the various models and

approaches stated and support for simultaneous use. The following items will be considered: SVaR, CVA VaR, and what the Basel Committee have implemented or proposed. All three have resulted from the financial crisis and are some of the key elements that have been put in place to strengthen VaR. There are other proposals and protocol but the author has chosen a selection of the most important ones.

SVaR was developed during Basel II.5 and has maintained its place as a key model for calculating risk. It is similar to VaR in many ways, but the striking difference is that it calculates periods of extreme stress, something that VaR struggles to compute. Whilst VaR is traditionally based on a 99 percent confidence level over a ten day horizon that is then observed over a twelve month period, SVaR will apply similar formulaic calculations but the period of time will be both static and of extreme stress.[1168] The reasoning for this is to reflect the volatility of the twelve month period that a bank is testing.

The catalyst that ignited SVaR came from the financial crisis and that losses in a bank's trading book were much higher (and predicted to be) than the minimum capital requirements for Pillar 1.[1169] The goal of SVaR is that it must reflect a period of stress that is relevant to the bank

[1168] M Choudhry, 'A Review of Value-At-Risk' in M Wong, *Introduction To Value-At-Risk* (5th edn, John Wiley & Sons Ltd 2013) 158.
[1169] F Cannata and M Quagliariello 'A New Framework for the Trading Book' in F Cabanas, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 126.

conducting the test. Whilst this is a large computational task, the results will be more accurate and it would make sense for a bank to calculate in this manner as it will be tailored to them.[1170]

It is envisaged that by adding VaR and SVaR together for regulatory capital purposes the doubling of capital will act has a large capital buffer for stressed conditions and will counteract the pro-cyclical tendencies that VaR exudes. Wong explains that the notion of creating SVaR is considered to be a first buffer against pro-cyclicality,[1171] or first line of defence. Furthermore and to reiterate, SVaR looks at increasing the overall level of capital for assisting trading book activities and to avoid pro-cyclicality.[1172] There are criticisms of this model that will be discussed shortly. Needless to say, SVaR is a welcomed addition to risk measuring and one which the author believes will prove to be very positive.

Similar to SVaR, CVA VaR is a model created as a reaction to the financial crisis. It considers, '…the fair price of counterparty risk for a derivatives transaction'.[1173] The reason why this model was created was that just

[1170] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters, 2011) 105-106.
[1171] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 209.
[1172] F Cannata and M Quagliariello 'A New Framework for the Trading Book' in F Cabanas, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 126.
[1173] M Choudhry, *'*A Review of Value-at-Risk' in M Wong*, Introduction to Value-at-Risk* (5th edn John, Wiley & Sons Ltd 2013) 162.

over 60 percent of losses from counterparty risks came from CVA pricing.[1174]

Prior to CVA VaR, Credit Value Adjustment[1175] (CVA) was included in Basel II which covered the risk of counterparty default. The problem with Basel II was that the standards did not account for the risk of variations of CVA. Hence when the Basel Committee observed the losses incurred during the financial crisis it was ascertained that two thirds came from CVA pricing and not actual default, so the Basel Committee created CVA VaR to act as a capital buffer[1176] and this would be modelled as CVA VaR which comes from those changes in credit spreads.[1177]

Essentially there are two stages of simulation, one calculates the average of simulated market values across maturities, and one will simulate the different shocks which gives the distribution. The Basel regulations uses a simplified version of this CVA formula[1178] compared with the complex and developing nature of this model. CVA VaR has been described as:

> '…the difference between the value of a derivative assuming the counterparty is default risk-free and the value of a derivative reflecting the default risk of the counterparty. The flip side of the

[1174] Ibid 162-164 for a detailed description of how CVA VaR is calculated.
[1175] Difference between risk free and true value portfolio.
[1176] J Bessis, *Risk Management in Banking* (4th edn, John Wiley & Sons Ltd 2015) 194.
[1177] Ibid.
[1178] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 210.

> CVA, the debt value adjustment ("DVA"), reflects the debit side of the transaction, *i.e.,* the difference between the value of the derivative, assuming the bank itself is default-risk-free, and the value of a derivative reflecting the default risk of the bank'[1179]

Some banks go further and include a funding valuation adjustment which collates the impact of funding and liquidity in relation to cost of a trade whereby it is uncollateralised.[1180] This is to ensure that the cost of posting collateral to assist in any hedge, in any inter dealer market, is properly accounted for.

There are issues with this model such as it not accounting for wrong-way risk, default risk of the counterparty, and the differences in how it has been adopted in the United States and the EU which could lead to arbitrage, but these will be discussed in the weaknesses subsection shortly. Due to its infancy, CVA VaR will naturally progress over time and should stifle these inconsistencies.

Further to SVaR and CVA VaR, it should be considered as to what the Basel Committee have implemented to improve VaR, bearing in mind that the Basel Committee have been involved in both SVaR and CVA VaR.

[1179] Shearman and Sterling LLP, 'Basel III Framework: The Credit Valuation Adjustment (CVA) Charge for OTC Derivative Trades' http://www.shearman.com/~/media/files/newsinsights/publications/2013/11/baseliiiframeworkthecreditvaluationadjustmentcva-chargeforotcderivativetradesfiafr111113.pdf page 2 quoting the Basel Committee accessed 10 March 2017.
[1180] Ibid page 2.

The Basel Committee issued a consultative document in 2012 titled "Fundamental Review of the Trading Book".[1181] The document considered the development of market risk models as well as the regulatory framework. Specifically and in reference to models, the Basel Committee suggested several areas of improvement. Firstly, the replacement of VaR with expected shortfall[1182] (ES). This will mean that any gap risk that is overlooked by VaR will be counted for by ES. It should be noted that ES has many benefits in that it will be a coherent measure and whilst allowing for gap risk it will also capture tail risk.[1183] In addition, it is also less likely for manipulation.[1184] Perhaps the biggest boon of ES is that management are likely to understand it, as Wong suggests.[1185] Secondly, it was suggested that stressed calibration of risk models should be used, acknowledging that those risk models which calculate recent data cannot account for events when a crisis occurs however accurate the data may be. Thirdly, an acceptance and incorporation of the risk of market illiquidity. A suggestion put forward is the idea that banks should have a capital add-on for the instruments that may produce an increase in times of stress. Another suggestion is to use the Incremental Risk Charge model

[1181] Bank for International Settlements, 'Fundamental Review of the Trading Book' http://www.bis.org/publ/bcbs219.pdf accessed 24 February 2017.
[1182] An average of all losses.
[1183] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 214.
[1184] Jon Danielsson and Chen Zhou, 'Why Risk is so Hard to Measure' http://www.riskresearch.org/files/DanielssonZhou2016.pdf page 19 accessed 31 March 2017.
[1185] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 214.

(IRC) to allow for differing liquidity horizons.[1186] A year later, the Basel Committee submitted a second consultative document in 2013,[1187] the finer details and proposal put forward have not become final other than a further consultative document published late 2014 of the outstanding issues.[1188]

Whilst improvement has been achieved and progress made, there are some weaknesses of the proposals put forward by the Basel Committee as will be discussed shortly. Nevertheless, VaR is moving in the right direction because there is consultation and solutions are being put forward.

What can be observed is that the concept of calculating risk using VaR ultimately failed leading to the financial crisis. Since that time an array of reactive rather than proactive measures have come into play with new models such as SVaR and CVA VaR, and the Basel Committee proposing several types of improvements in the form of consultative documents.

Before moving onto regulation, attention should be given to the three conventional approaches used when calculating VaR. Due to widespread use, the impact these approaches can have are varied and vast. It was

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[1186] Ibid.
[1187] Bank for International Settlements, 'Fundamental Review of the Trading Book: A Revised Market Risk Framework' http://www.bis.org/publ/bcbs265.pdf accessed 24 February 2017.
[1188] Bank for International Settlements, 'Fundamental Review of the Trading Book: Outstanding Issues' http://www.bis.org/bcbs/publ/d305.pdf accessed 31 March 2017.

considered in Chapter 4 what some of those issues have been such as calculating fat tails, sample size to small, and the inability to calculate parameter of distribution. The main suggestion put forward by the author is to use more than one approach so that a weakness in one can be strengthened by the other, hence it coming under this subsection. Unfortunately, it appears that there has been very little by way of enhancing the three approaches. Equally, there has been no attempt to discuss the possibility of using several approaches at once to accommodate inadequacies found in all three. This will be discussed in the weaknesses subsection shortly.

Regulation - What changes are taking place and have been suggested?

The main talking point here is the issue of wrong application of VaR, whether incorrectly or due to manipulation. The primary solution put forward in Chapter 4 was regulation which would not only help with the inability to calculate VaR, but also the inclusion of better training for staff, hence it being headed under regulation which is arguably the best form of response to counter this problem. The question arises as to what has taken or is taking place, and what has been suggested to improve VaR being implemented incorrectly.

There are two interesting suggestions put forward to improve this area which are research and independent vetting. A third suggestion, penalties

and sanctions has been put forward by the author of the research.[1189] In all three suggestions, regulation could be the driving force to spearhead these proposals and combat the issue at hand.

Firstly, the idea of investment into research so that models can be improved and the development of statistical tools that are far superior than currently used.[1190] This would seem an easy fix to implement as funding could either be put forward by the bank, or it could be an external source such as a company that specialises in mathematical calculation tools, equally it could be outsourced to universities and relevant facilities within those universities. A superior course of action would be to incorporate into regulation that banks need to allocate a specified amount of funds to find better ways of calculating VaR, although this method may prove more cumbersome and time intensive and it would also depend on the country. Whilst it is not mentioned in this proposal, investment could be put towards training for staff to improve employees whom work in this area. It could be argued that by investing in research this could improve statistical tools that would also aid staff. Resulting from this, training would need to be given on those improved statistical tools.

[1189] It should be noted that the Basel Committee will not be discussed here as it was examined under the first heading.
[1190] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 546.

Secondly, independent vetting teams could be created to assess how models are used by bank's.[1191] This could be implemented through regulation whether at domestic level or through the Basel regulations, and could either be externally checked by a third party or internally checked if the model used is externally made.[1192]

The process by which banks are vetted in terms of how they select and construct their risk measuring tools could prove beneficial in that if a bank is wrongly calculating risk then it may be that a simpler model could be used instead. On this point, Crouhy et al. state, '…it provides assurance that the model offers a reasonable representation of how the market itself values the instrument, and that the model has been implemented correctly'. [1193] Note the comment regarding it being implemented correctly, which is a key concern here.

Crouhy et al. further argue that there should be six stages in order for independent vetting to be successful. First, the vetting team should request that full documentation is given on the model that is being used by the bank. Second, the soundness of the model should be vetted to verify that the model being used is reasonable in relation to the product being valued. Third, the vetting team should have access to financial

[1191] Ibid.
[1192] CRO Council, 'Model Validation Principles Applied to Risk and Capital Models in the Insurance Industry' http://www.crocouncil.org/images/CRO_Council_-_Model_Validation_Principles.pdf page 6 accessed 13 July 2018.
[1193] M Crouhy, D Galai and R Mark, *The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014) 546.

rates i.e. the office has independent access to an unconnected financial rates database. Fourth, the vetting team should develop a benchmark model to compare with the current model being used and then calculate those results to see if they are accurate. Fifth, the vetting team should ensure that the models being used possess the basic properties that a stress test model should have such as non-arbitrage conditions. Finally, one should integrate model risk into the overall risk management of the bank and evaluate on a regular basis.[1194] This is a detailed response put forward to combat VaR through vetting teams and highlights the poor state that the utilisation of VaR is in and the changes that need to occur.

The aforementioned suggestions could improve the way a bank calculates risk. Equally, it could help reduce incorrect calculations, especially the independent vetting team proposal. Better training for staff could also benefit and stem from the first suggestion i.e. investment into research, as new statistical tools would need to be explained and staff would need to be trained through seminars and lectures on how to use them. However, neither of the two suggestions would stop manipulation.

The former two suggestions are in line with wrong application, what about manipulation of VaR? This is an important weakness and it is unnerving how easily it can be done.[1195] This is because, '…it is only a quantile on

[1194] Ibid 546-547.
[1195] J Danielsson, *Financial Risk Forecasting* (John Wiley & Sons Ltd 2011) 84.

the distribution of profit or loss, a financial institution will often find it easy to move the quantile around and hence manipulate VaR'.[1196] The big problem here is that risk can be reduced, for this reason the author believes a much stronger stance should be taken in the form of penalties and sanctions.

Thirdly, penalties and sanctions would be the third suggestion put forward by the author of the research to combat incorrect application or manipulation, specifically the latter. This is because it would act as a deterrent to stop, or make banks think twice about manipulating results extracted from a VaR calculation. The Basel Committee has considered this and they have provided a procedure to sanction those who underestimate risk.[1197] This is definitely a step in the right direction and should be pursued further. Unfortunately, this area has not been thoroughly explored or endorsed. This may be due to that giving penalties and sanctions to large banks could be both time consuming and money intensive. As a result, it has not been pursued to any great length and will be discussed in the weaknesses and recommendations subsections. It should be noted that the reason why it may not have been explored is due to banks wanting their employees to calculate risk correctly, as it would be detrimental and could cause repercussions[1198] as Choudhry indicates, this could be reputation negativity for example. Furthermore,

[1196] Ibid.
[1197] A Burchi, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284, 300.
[1198] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.

those involved would be committing fraud which is both a sackable offence and could result in imprisonment.[1199]

Nevertheless, manipulation does exist and can be used in meeting capital requirements[1200] and when VaR becomes a target as opposed to a risk measure, then incentives are created.[1201] This is what happened leading to the financial crisis, managers were not only given incentives to create big profits but to gain profits that had low risk.[1202] This brazen attitude is deeply concerning and action needs to be taken as the consequences were massive, but this was not taken into account because the likelihood of giant losses were slim and ignored.[1203]

Weaknesses

It is inevitable that faults will always be found in regulation and policy and even recommendations. It is wise to reflect on the weaknesses found from the changes and suggestions put forward from the issues that have just been contemplated. Leading from this, recommendations will be given.

[1199] Ibid.
[1200] Bogdan Izmaylov, 'Value-at-Risk: Strengths, Caveats and Considerations for Risk Managers and Regulators' http://pure.au.dk/portal-asb-student/files/71175799/Master_Thesis_Bogdan_Izmaylov.pdf page 16 accessed 31 March 2017.
[1201] Ibid page 35.
[1202] Joe Nocera, 'Risk Management' https://www.nytimes.com/2009/01/04/magazine/04risk-t.html accessed 29 June 2018.
[1203] See Christopher Whittall, 'Value-at-Risk Model Masked JP Morgan $2 bln Loss' https://www.reuters.com/article/jpmorgan-var/value-at-risk-model-masked-jp-morgan-2-bln-loss-idUSL1E8GBKS920120511 accessed 9 July 2018.

Two areas have been considered under VaR which are the use of several models and approaches, and regulation. The former highlighted SVaR, CVA VaR, the Basel Committee consultation papers and a final thought concerning the three conventional approaches to calculating risk. The latter highlighted research, independent vetting teams, and penalties and sanctions when calculating risk. With this in mind some of the weaknesses from these key movements will now be considered.

Firstly, the use of several models and approaches. The suggestions put forward and areas highlighted were SVaR, CVA VaR, Basel Committee consultation papers, and the combination of the three conventional approaches. The weaknesses of these are the following.

SVaR has one major weakness - double counting. What this means is that the figure calculated by SVaR will be added to that of VaR, thus double counting risk. Whilst this could be construed as positive and that a higher capital buffer results from this, it is an expensive form of safeguarding against risk in that more capital will need to be put to one side. Equally, the market cannot be both normal and stressed at the same time.[1204] This problem is concurred with by many and it is easy to contemplate why. The overlapping nature between VaR and SVaR is uncanny and the results from both can be similar thus double counting is inevitable,[1205] as

[1204] M Choudhry, 'A Review of Value-at-Risk' in M Wong, *Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 158.
[1205] R Barfield, 'Trading Book and Securitisation' in I Vry, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters, 2011) 106.

Vry notes. People within the banking industry have purported this issue and that by adding SVaR to VaR into capital requirements double counts risk. It has been argued that a measure to dampen cyclicality is needed and a weighted average of VaR and SVaR would be more efficient.[1206]

Furthermore, there is no incentive to improve VaR as SVaR would become the leading market risk measuring tool and would essentially penalise a bank with an already capable and prudent model. This issue was rectified somewhat in July 2009 when the Basel Committee stated that back testing should also apply to SVaR and as such promoted banks to have a prudent model in place.

This weakness highlights that there is still much work to do for SVaR to become more robust and efficient. Whilst the author of the research would argue that an increased buffer (double counting) is viewed negatively, the author believes that the more capital put to one side the better, as long as a bank has sufficient amounts of liquid assets (see Capital Ratios).

Similar to SVaR, CVA VaR is not without fault and has several weaknesses that need to be acknowledged. The issue is that it does not calculate

[1206] F Cannata and M Quagliariello 'A New Framework for the Trading Book' in F Cabanas, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011) 126.

wrong way risk, default risk of a counterparty or bilateral CVA.[1207] In addition there is the issue around adoption of CVA VaR, specifically how it has been incorporated into law from a United States and an EU perspective.[1208]

Essentially, CVA VaR has been simplified in what is a very intricate and less developed model, hence it omits certain criteria and has many issues. Whilst there are several weaknesses of CVA VaR, it should be acknowledged that this area of risk model is in its infancy and will develop over time. CVA VaR will be discussed in the recommendations subsection as it is an area that can be greatly improved.

The next issue is the Basel Committee and the consultative paper in 2012, 2013 and outstanding issues in 2014 respectively. The papers focused on ES and that this model would make up for inadequacies shown in VaR such as gap risk and tail risk. This is one of the major weaknesses of the paper and that ES requires a bank to look at the entire distribution of assets and over a long period of time. As Barrailler and Dufour note, in some cases sampling may be too short.[1209] Additionally, back testing can

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[1207] M C Y Wong, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013) 211.
[1208] Shearman and Sterling LLP, 'Basel III Framework: The Credit Valuation Adjustment (CVA) Charge for OTC Derivative Trades' http://www.shearman.com/~/media/files/newsinsights/publications/2013/11/baseliiiframeworkthecreditvaluationadjustmentcva-chargeforotcderivativetradesfiafr111113.pdf page 3 accessed 10 March 2017.
[1209] Matthieu Barrailler and Thibaut Dufour, 'Value at Risk and Expected Shortfall' http://users.polytech.unice.fr/~dufour/files/PFE_ES_Report page 14 accessed 1 March 2017.

cause an issue under ES in that one needs a long duration period to back test, twenty years in fact to be confident that an accurate figure can be reached. It is possible to back test over a smaller period of time but inefficient results will surface.[1210] The Basel Committee have discussed the issue of back testing in the second consultative paper and as such the development of ES will need to be monitored over the coming years. At present, outstanding issues was the last paper released in 2014.

Finally, the combination of the three conventional approaches or lack of discussion about the positives of doing so. The issue is that the idea of combining several approaches has not been considered, although it should be appreciated that the use of several approaches may not have a huge impact as the end result Choudhry stipulates is still a rough estimate on the risk being valued.[1211] Choudhry makes a valid point and essentially it is the result that needs to be scrutinised to assess the true impact of the risk being considered. However, the author would still disagree and put forward that a mix of the three approaches may yield beneficial results. The three approaches will be discussed in the recommendation subsection shortly.

Now that the use of several models and approaches has been discussed, attention turns to the second and final suggestion for improving VaR - regulation. Under this heading some of the suggestions put forward were

[1210] Ibid.
[1211] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.

research into better models which could filter to better training for staff, independent vetting teams and penalties and sanctions.

Research into better models was highlighted in respect of regulation and combating the problem of those that incorrectly apply VaR calculations. Investment in the area of research could help suppress this issue and could be achieved by banks or by outsourcing to specialist companies or universities. The benefits of better statistical models would also benefit those who use them and would need to be explained and taught to staff, thus providing better training for staff. In order for it to become mainstream it is arguable that regulatory bodies would have to be involved, whether this be at domestic level or promoted through the Basel regulations. The potential weakness here is time and cost. On this basis it may be efficient to promote research through the Basel regulations.

Independent vetting teams was the second proposal suggested to assist VaR being implemented correctly. It would surely provide assistance for those applying VaR incorrectly, for instance if the wrong approach is being taken then the vetting team can instruct on a better form of action. Like the research suggestion, perhaps the weakness here is the process of putting such a system in place. Regulatory bodies or the Basel Committee could provide great assistance in driving this forward and promote independent vetting teams to assess banks as to whether the correct models are being used and constructed.

The aforementioned weaknesses can be rectified as proposals are in circulation, however they only refer to a bank incorrectly applying VaR. The issue still stands in relation to penalties and sanctions in order to reduce manipulation. This is an area which the author of the research would argue is the remedy. Penalties and sanctions should be introduced not as a way to increase revenue for government or regulatory bodies, rather the impetus on deterrence. If banks are susceptible to penalties and sanctions then there would be a reduction in manipulation of VaR and other risk measuring tools. Whilst it has been debated as to how effective penalties and sanctions would be due to bank's not wanting to damage their reputation, and that employees would be sacked and may potentially face imprisonment,[1212] the author would still promote this course of action for deterrent purposes.

In summary, the following key points that are deemed most crucial will now be discussed in the recommendations subsection on what the author deems to be the most crucial in order to improve VaR and limit those risks and shortcomings examined. Not all will be mentioned but rather the items that will best support VaR; these are CVA VaR, the three conventional approaches, and penalties and sanctions in relation to manipulation of VaR.

[1212] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.

Recommendations

Several areas and material were considered during this section on VaR and these continued from the main risks and shortcomings detailed in Chapter 4. Those risks were narrowed further which contained old and new challenges for Basel III and the banking sector.

Rather than discussing all risks and shortcomings mentioned and the weaknesses that still exist from current policy and regulation in place and suggestions put forward, there are three areas that the author believes to be the most important that will provide the greatest benefit if supported. This is on the basis that some of the weaknesses mentioned are already being consulted on and have been commented on as to how they can be improved. The three areas that will be focused on are relatively untouched in terms of Basel III changes, policy or regulatory body changes and proposals, or academic discussion. These are CVA VaR, the three conventional approaches, and manipulation of VaR leading to incorrect results.

Firstly, is CVA VaR. A model created after the financial crisis and concerned with counterparty risk for a derivative transaction. It was explained earlier in this section that over 60 percent of losses for banks came from counterparty risks relating to CVA pricing, hence the formation of CVA VaR. There are issues with this model such as wrong-way risk and default risk of a counterparty, however these are not the reasons why

CVA VaR has been put in the recommendations section (only partly). The principal reason for choosing CVA VaR is that it is still in its infancy. Over time the issues surrounding wrong way risk and default risk of a counterparty will be rectified as will the other aforementioned issues. In fact, the Basel Committee has already revised the guidelines for wrong-way risk by using Effective Expected Positive Exposure under stressed market conditions. This will combat wrong way risk and must be calculated using a three year period which includes one year stressed conditions. If the stressed period used includes several years in the past then Effective Expected Positive Exposure should be compared with EAD;[1213] a step in the right direction.

Current recommendations include but are not limited to, the use of a benchmark system that relies on the internal risk management of a firm when measuring CVA (not a regulatory CVA) and that supervisors should review the possibility of any double counting and make sure that the risk is not capitalised twice.[1214] What the author of the research would recommend is strong support and investment (monetary and research) for this risk measuring tool as it will greatly enhance VaR. The reason is simple, two-thirds of losses for banks came from CVA pricing and

[1213] R Barfield, 'Counterparty Credit Risk' in M Mars and A Pontiki, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters 2011) 127-129.
[1214] Mark Gheerbrant and Michael Lever, Letter to European Banking Authority https://www.afme.eu/globalassets/downloads/consultation-responses/isda-afme-response-to-eba-consultation-on-guidelines-on-treatment-of-cva-risk-under-srep-eba-cp201521.pdf page 6 accessed 31 March 2017.

counterparty risk, only one-third came from actual default;[1215] a very high figure which needs to be reduced. For that reason, by developing CVA VaR, VaR can benefit and the banking sector can become more robust. Incentivisation of more complex VaR models such as CVA VaR should also be encouraged as they paint a truer picture of the economic world.[1216]

Whilst the author of the research recommends investment and research to improve CVA VaR there is one final element that needs to be considered - a bank. For CVA VaR to develop and become more robust, banks need to put in place the systems that are needed to use this risk measuring model. Fundamentally, Mars and Pontiki say that banks need to, '…transform themselves operationally by upgrading their data, systems and know-how'.[1217] This draws on the previous points made in that investment and research is needed, by doing so CVA VaR can become an effective risk measuring tool. Mars and Ponitiki are correct and banks need to upgrade many areas from data and systems to know-how. As a result, investment and research will develop and support this relatively new area of risk measuring. By doing this and with the support of banks, CVA VaR can strengthen counterparty risk and support VaR in general. It should be acknowledged that some have said, '…once one deals entirely

[1215] M Choudhry, 'A Review of Value-at-Risk' in M Wong, *Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013) 162.
[1216] A Burchi, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284, 300.
[1217] R Barfield, 'Counterparty Credit Risk' in M Mars and A Pontiki, *A Practitioners Guide to Basel III and Beyond* (Thomson Reuters, 2011) 145.

via the centralized clearing counterparty (CCP) then counterparty risk is eliminated so CVA VaR becomes irrelevant'.[1218] Choudhry raises an interesting point, however CVA VaR is not disappearing anytime soon, and investment and research is very much the way forward because a centralised clearing counterparty will not be the sole way in which deals are only cleared, not yet at least in the author's opinion. Furthermore, there are some concerns of a centralised clearing counterparty which raises the issue of systemic risk as higher proportions of trading is completed this way institutions will become concentrated to this area.[1219]

Secondly, the three conventional approaches discussed previously and are the most used when it comes to calculating VaR, yet they are not normally used together. The author of the research would recommend using not one approach at any given time but using two or even three. The weaknesses of the aforesaid have been illustrated and the suggestion mentioned in Chapter 4 was that by using more than one approach could help allow a weakness in one to be circumvented by the other. However, there has been no exploration of using more than one approach and the feasibility of such.

[1218] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.
[1219] ICMA, 'What Does a CCP do? What are the Pros and Cons? https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/icma-ercc-publications/frequently-asked-questions-on-repo/27-what-does-a-ccp-do-what-are-the-pros-and-cons/ accessed 29 June 2018.

There is the suggestion that there would be no great improvement by using more than one approach because essentially the end result is still an estimate[1220] and that what needs to be considered and scrutinised is the figure after the calculation and what it means. In essence, it is a rough guide and estimation. Once the figure is derived then a multiple should be applied,[1221] it could be double or even triple to safeguard the risk. Whilst the author of the research would agree with this notion, the author would still argue that there are benefits of using more than one approach. Other than the weaknesses already put forward, another benefit could be that if a bank uses two approaches and the two end results differ greatly, then there may be an issue with the risk being valued. What this would indicate is that the figure should be carefully scrutinised and capital for that risk should be increased further to what is currently being calculated. Another benefit and leading from the previous point is that an average could be achieved if, for example, the Historical Simulation Approach was calculating a low risk figure and the Monte Carlo Simulation Approach was calculating a high risk figure. Primarily, the end result should be prudently considered and assessed. The author would state that at the end a more robust VaR calculation will be achieved and this is a belief expressed by many.[1222]

[1220] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.
[1221] Ibid.
[1222] Finance Train, 'Three Methodologies for Calculating VaR' http://financetrain.com/three-methodologies-for-calculating-var/ accessed 31 March 2017.

The third and final recommendation is tackling manipulation of VaR. The inability to calculate correctly was investigated in the subsection regulation in which it was signified that one of the main weaknesses of VaR was the inability of persons to calculate VaR correctly and effectively. This resulted from the inability to calculate correctly either by persons under qualified to conduct such a task, or persons were purposely manipulating the results. The former problem is in the process of being improved with proposals of research teams to find better models to use and vetting teams to assess whether banks are calculating VaR correctly, therefore this area will not be looked at further. Whilst these proposals potentially solve the issue of incorrectly applying VaR, they will not fix the latter issue of manipulation and it is this that the author believes should be pursued.

The recommendation would be to introduce penalties and sanctions across the board in the mindset that prevention is the best form of defence and this would act as a deterrent for banks to not abuse the system. This could be achieved one of two ways, the Basel regulations or regulatory bodies. The former would be the preferred choice in that the Basel regulations are incorporated around the world. However, the issue here would be that it could portray the Basel Committee as being too opinionated. Therefore, the second way might be a more suitable mechanism. The only problem with this is two fold, gaining a wide consensus that it is the correct way forward and it being time intensive.

On this basis the author would recommend a passage to be inserted in the Basel regulations stating that in respect of manipulation of VaR calculations it is at the discretion of the country in which the manipulation is taking place as to whether that country and regulatory body wishes to penalise or sanction the bank involved. By doing it this way it would solve both issues previously mentioned i.e. the Basel Committee seen as wanting to enforce penalties and sanctions, and the time intensive nature it would take to accumulate many countries in creating laws that allowed penalties and sanctions for manipulation of VaR. The end result would be the global reach that the Basel Committee has, thus eliminating the time issue and the discretionary nature it would give to countries around the world. It is arguable that many countries would want to incorporate such law into domestic law as the manipulation of VaR can have serious implications for the economy in which it is taking place. After all, a country will want to protect their economy.

Some have argued that penalties and sanctions would have no real effect.[1223] Choudhry gives an example albeit in a different capacity of how a large bank was penalised for many of their ATM's going out of service over a busy weekend. The argument here is that the bank did not want their ATM's to go out of service thus impacting on their customer relationships. A large financial penalty was imposed and Choudhry states that this had little impact as the event had already occurred. Whilst this

[1223] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.

example can be appreciated, although not fully transferrable, the author of the research would still argue that there is a place for penalties and sanctions for reputation purposes, deterrent purposes, and that banks will want to employ the highest calibre candidate. Therefore, penalties and sanctions do have a place in the banking world when it comes to manipulation of VaR calculations. Additionally, the example explained by Choudhry does not directly link to manipulation of VaR and is used in a different context to the one being given.

Conclusion

The main focus points for VaR has been on several models and approaches, and regulation. These encompass several issues which included the inability to cope with volatile markets, complex models, over reliance, VaR applied incorrectly, and the three conventional approaches. Some of these issues overlapped and were amalgamated so that a more concise response could be given in tackling VaR.

The issues explored in Chapter 5 were originally discussed during Chapter 4. They were continued in this chapter so that they could be investigated further and to whether there had been any developments to improve the risks and shortcomings explained taking into account policy changes, changes in domestic law, and the Basel regulation amendments and consultative documents. The chapter then moved forward by looking at the weaknesses that still persisted or were created from the changes that

had taken place or suggestions put forward. For conformity and clarity with the two previous sections the chapter then moved onto recommendations and how best to tackle the problems highlighted. A recommendation for all weaknesses was not given due to current and potential changes already happening that made the notion of a recommendation redundant as mechanisms are (were) already in place and moving forward. Additionally, there were issues that stood out which needed urgent attention. On this basis these were CVA VaR, the three conventional approaches, and manipulation of VaR.

CVA VaR was created after the financial crisis, it is concerned with counterparty risk for a derivative transaction. The huge problem in this area is that over 60 percent of losses for banks came from counterparty risks in relation to CVA pricing leading to and during the financial crisis. To alleviate this problem CVA VaR was created. The recommendation put forward by the author of the research was to invest monies in this area and to promote research to develop and strengthen this model. The ideal result would be to reduce the aforesaid figure of losses to a much lower percent.

The three conventional approaches to calculating risk was the second recommendation. There are weaknesses of all three and on this basis the recommendation would be to use not one approach when calculating risk but to use two or even three approaches. This was on the basis that inadequacies in one approach could be appeased by strengths of another.

This has not been thoroughly explored and was suggested not only on the basis of strengthening the approaches taken to calculate risk but also that the three approaches are the most conventional and most used. Therefore, improving this area would produce significant and widespread positive results.

The third and final recommendation looked at manipulation of VaR which results in misleading and incorrect figures. The proposal put forward here was to introduce penalties and sanctions. This could be done by one of two ways. Firstly, through the Basel regulations, or secondly with domestic regulatory bodies. The latter was deemed more appropriate from the perspective that if the former was incorporated into the Basel regulations then it could be perceived that the Basel Committee were in favour of penalising. However, ideally the former would be the solution as it would have a better chance of adoption due to the Basel regulations being implemented by many countries around the world, resulting in far wider reach and impact.

If the three recommendations put forward by the author of the research come to fruition it will strengthen VaR. Alongside the proposals and discussions in place in respect of the other weaknesses of VaR then a more robust and responsive risk calculating tool can be achieved.

In terms of VaR going forward and how it will look in the future, it should be accepted that it is a risk measuring tool that estimates risk, emphasis

on estimate.[1224] It is a guide and one should proceed with caution. To a certain degree VaR has been made a scapegoat for the financial crisis. It has been criticised as one of the main perpetrators for the catalyst that brought the banking world to its knees. Whilst some are convinced that VaR cannot be improved and that it only applies to smaller banks where the portfolio does not partake in exotic transactions,[1225] it is proposed that there is still a place for VaR for the recommendations already mentioned. Until a better risk measuring tool comes along then VaR will and should be used. Burchi rightly puts forward that abandonment of VaR is not an option[1226] and advanced models may provide more accurate results if used.[1227] The author would concur with this and would also postulate that it is a rough guide to calculating risk and one should proceed with caution when analysing the end computation.

In addition, the results derived from VaR should be carefully examined and in some instances doubled or even tripled to account for risk. VaR still has a huge role to play and is still the lead risk measuring tool, the author would imply that the way forward includes VaR, it just needs to be improved.

[1224] Private meeting, Professor Moorad Choudhry, 23 March 2017 London.
[1225] Ibid.
[1226] A Burchi, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284, 301.
[1227] Ibid.

RESEARCH CONCLUSION AND FINAL THOUGHTS

Basel I was created to establish a safer environment because the Basel Committee recognised that banks could fail due to operational losses and this encouraged the creation of Basel II (emphasis on operational risk) and Basel II.5 as a result of the financial crisis;[1228] and Basel III followed shortly thereafter. Whilst the author would agree that the Basel Committee have been reactive over the last three decades and the research focuses on the risks and shortcomings of Basel III, it should be stressed that there are strengths contained in all three Basel Accords and this was included at the appropriate stages of the research.

A timeline was illustrated for two reasons, to enlighten those that may not be familiar or have little knowledge about Basel I, II and III, and for those that are more informed then an appreciation of the progression made, the milestones achieved, and the issues encountered alongside recommendations to improve Basel III could be acknowledged.

Chapter 1 explained the layout that the research would follow, theory and method were included and a brief overview of Basel I including strengths and weaknesses.

[1228] I A Moosa, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015) 139-140.

Chapter 2 focused on Basel II and the improvements and restructuring that was made, as well as a brief discussion about Basel II.5 in the aftermath of the financial crisis. It also further developed the theme of the good and bad aspects of Basel II and II.5, some of which continued from Basel I.

Chapter 3 progressed with the critical analysis of Basel III together with its strengths and weaknesses.

Chapter 4 developed Basel III further with analysis and centred on the three main risks and shortcomings believed to pose most risk to the current regulations - Capital Ratios, CRAs and VaR. This was to refine the weaknesses portrayed throughout the research and to illuminate the three key problems with Basel III according to the author. It also analysed their weaknesses and also the impact they have had on the Basel regulations together with consideration as to how they can be improved.

Chapter 5 began with a brief overview of the content explored, in depth use of material and commentary was given on the three risks alongside recommendations. A brief discussion was directed toward the Basel III additional work and the recent December 2017 papers, as well as the inclusion of recent commentary in regard to the changes to the Basel framework that will be arriving in the immediate future.

What can be deduced from the research is that the Basel regulations have progressed since 1988 and developed immensely in Basel III. Weaknesses have persisted, some have been created, and some have been eradicated. Whilst the Basel regulations have been in operation for over three decades and adopted by many countries around the world, it is clear that a lot of work still needs to take place and the recent events of the financial crisis reinforces this point. It is intended that the research highlights this and that with effort and perseverance Basel III can become stronger. On this point, it is worth noting the recent developments of Basel III.

Basel III reforms or Basel IV?

Basel III is still in the process of being fully implemented. Additionally, some implementation dates have been missed over the years since Basel III began[1229] and it may take far longer to satisfy the percentages featured during the research. It is indisputable that banks still have work to do in implementing Basel III,[1230] for example in 2017 a proposal to extend the implementation for minimum capital requirements for market

[1229] Financial Stability Board, 'Basel III - Implementation' http://www.fsb.org/what-we-do/implementation-monitoring/monitoring-of-priority-areas/basel-iii/ accessed 25 April 2018.
[1230] Deloitte, 'Finalization of the Basel III Post-Crisis Reforms' https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/risk/lu-rna-finalization-basel-iii-post-crisis-regulatory-reform-08122017.pdf page 3 accessed 25 April 2018.

risk was endorsed and extended to 1 January 2022.[1231] Implementation still, therefore, poses a problem.

Even though Basel III is still relatively new and capital requirements (among other requirements set) have not been adhered to in their entirety, it has not stopped the whisperings of a new Basel iteration - Basel IV.[1232] The fourth iteration of the Basel regulations is believed to have already been agreed on,[1233] although the Basel Committee are still referring to this as Basel III.[1234] In reality the reforms that have been made which are published as 'High-level summary of Basel III reforms'[1235] and 'Basel III: Finalising post-crisis reforms'[1236] are supplements and finalisations of Basel III – not Basel IV.

The measures seek to complement the existing Basel III framework and restore credibility in RWA and comparability of bank capital ratios.[1237] A speech from William Coen, the Secretary General of the Basel Committee prior to this point, suggested that the Basel framework was being

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[1231] Bank for International Settlements, 'Governors and Heads of Supervision Finalise Basel III Reforms' https://www.bis.org/press/p171207.htm accessed 24 April 2018.
[1232] As will be alluded to over the coming pages, it is more of an 'add-on' rather than Basel IV.
[1233] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf accessed 25 April 2018.
[1234] Justin Pugsley, 'Basel IV's Done - Now Comes the Hard Part' http://www.thebanker.com/Banking-Regulation-Risk/Reg-Rage/Basel-IV-s-done-now-comes-the-hard-part?ct=true accessed 24 April 2018.
[1235] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf accessed 09 April 2019.
[1236] Bank for International Settlements, 'Basel III: Finalising Post-Crisis Reforms' https://www.bis.org/bcbs/publ/d424.pdf accessed 9 April 2019.
[1237] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf page 1 accessed 25 April 2018.

finalised and progress had been made in several areas such as NSFR, financial support for off balance sheet entities and capital-out-put floors.[1238] Thus indicating the meetings and discussions conducted that have now come to fruition.[1239]

The finalisation of such measures would appear complete and most of the implementation dates are set at 2022. These include revisions to the standardised approach for credit risk, a revised market risk framework, and leverage ratio to name but three.[1240] It is only the output floor which has a longer implementation period and is a staggered process starting from 50 percent beginning 2022 rising to 72.5 percent by 2027.

Even though the reforms published in December 2017 are finalised, the author would disagree. As Deloitte commented, 'A lot still has to happen before these standards are finalised and implemented…'. [1241] For example, the fundamental review of the trading book has already been delayed from 2019 to 2022 and this shows that elements of the 'finalised' reforms are still subject to change.

[1238] Bank for International Settlements, 'The State of Global Financial Regulation' https://www.bis.org/speeches/sp171013a.pdf accessed 24 April 2018.
[1239] In document form at least.
[1240] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf page 12 accessed 25 April 2018.
[1241] Deloitte, 'Finalization of the Basel III Post-Crisis Reforms' https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/risk/lu-rna-finalization-basel-iii-post-crisis-regulatory-reform-08122017.pdf page 2 accessed 25 April 2018.

It is important to note that Basel III primarily focused on the numerator in regard to the minimum required regulatory capital. In contrast, the reforms to the Basel III framework focuses on the denominator i.e. the calculation of risk exposure relating to credit, market and operational risk.[1242] The reforms[1243] are a clear sign that tougher regulation is inbound.

It would be permissible to assume that the reforms made would not necessarily mean higher capital requirements for banks, after all, sizeable percentage increases have already taken place from Basel II to Basel III. However, as will be discussed over the remaining section this is to the contrary. Points that will be raised consist of some of the material from the December 2017 papers and commentary of where the Basel regulations are going.

There are some key points (and challenges) to note from the changes made following the December 2017 papers and projections voiced since 2015. This is to illuminate the direction that the Basel regulations are going and how the recent additional work seeks to make Basel III more robust. These include but are not limited to capital requirements (which includes rising costs, capital shortfall, CET1) which appear to affect

[1242] KPMG, 'The World Awaits: Basel 4 Nears Completion' https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2016/12/world-awaits-basel-4-nears-completion.pdf page 3 accessed 25 April 2018.
[1243] European Parliament, 'Upgrading the Basel standards: From Basel III to Basel IV?' http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/587361/IPOL_BRI(2016)587361_EN.pdf page 9 accessed 24 April 2018.

European banks predominately, a fundamental review of the trading book, RWA, and finally other challenges such as implementation costs that come from creating new internal models, timely and accurate data to make calculations, and establishing internal management information which is used for external reporting. There are other revisions that have been made, these are but some of those revisions that will challenge banks going forward.

Firstly, the Basel Committee has identified four banks that will be affected by rising capital requirements that fall into the category of global systemically important banks[1244] (GSIBs).[1245] The potential problem this may cause is that if four of the current 30 GSIBs[1246] are going to be affected by the rising capital requirements then this can impact the banking sector due to the wide reaching capabilities of GSIBs. In addition, the Basel Committee has suggested that there will be a capital shortfall for large banks, and this will be most noticeable for European banks whereby minimum capital required is set to increase by 12.9 percent in order for those banks to remain compliant.[1247]

[1244] Banks that are too big to fail and if they did then a financial crisis would be all but confirmed.
[1245] Justin Pugsley, 'Basel IV's Done - Now Comes the Hard Part' http://www.thebanker.com/Banking-Regulation-Risk/Reg-Rage/Basel-IV-s-done-now-comes-the-hard-part?ct=true accessed 24 April 2018.
[1246] Financial Stability Board, 'FSB Publishes 2017 G-SIB List' http://www.fsb.org/2017/11/fsb-publishes-2017-g-sib-list/ accessed 1 May 2018.
[1247] European Banking Authority, 'EBA Publishes Full Impact Assessment of Basel Reforms on EU Banks' https://www.eba.europa.eu/-/eba-publishes-full-impact-assessment-of-basel-reforms-on-eu-banks accessed 24 April 2018.

Secondly, a fundamental review of the trading book[1248] will take place. This is changing in three areas: definition of the trading book, a new standardised approach for all market risk areas, and a review of the internal model approach.[1249] The problem this may cause, for example, is that in respect of total RWAs this could have a negative impact for banks and capital market activities.[1250] If capital market activities are reduced then this may impact on domestic economies, lending protocol, business relationships and new business ventures.

Thirdly, CET1 will change and in respect of European banking, CET1 capital requirements will be severely affected with an expected shortfall of about €120 billion.[1251] What can be deduced from these revisions is that banks are being squeezed further, and more money is required in order for banks to align with the refined Basel regulations. Especially for European banks.

[1248] European Parliament, 'Upgrading the Basel Standards: From Basel III to Basel IV?' http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/587361/IPOL_BRI(2016)587361_EN.pdf page 9-11 accessed 24 April 2018.

[1249] M Niesen and S Roth, 'Fundamental Review of the Trading Book: New Framework for Market Risks' in M Ohliger, M Schulte-Mattler and D Stemmer, *Basel IV the Next Generation of Risk Weighted Assets* (Wiley-VCH Verlag & Co. 2017) 147.

[1250] European Parliament, 'Upgrading the Basel standards: From Basel III to Basel IV?' http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/587361/IPOL_BRI(2016)587361_EN.pdf page 10 accessed 01 May 2018.

[1251] McKinsey&Company, 'Basel "IV": What's Next for Banks?' https://www.mckinsey.com/~/media/mckinsey/business%20functions/risk/our%20insights/basel%20iv%20whats%20next%20for%20european%20banks/basel-iv-whats-next-for-banks.ashx page 9 accessed 24 April 2018.

Fourthly, another revision will be RWA and internal ratings (which includes capital floors previously spoke of).[1252] For example, the Basel Committee have stated that calculation of RWA using internal models should be above 72.5 percent when using standardised models, thus it should not drop below this figure.[1253] RWA will have a five year implementation date which will begin 2022.[1254] This could further impede European banks who would prefer a 70 percent figure, the United States in comparison have been pushing for 75 percent[1255] as they are already in a position to satisfy such. Additionally, the increases suggested could affect European banks by 40 to 60 percent which equates to about €7 trillion in aggregated RWA.[1256] For instance, there will be a sharp increase in credit risk RWA due to quantity of credit in a bank's portfolio combined with the strictness of the new credit risk rules,[1257] as Wackerbeck et al. purport.

Other challenges that may arise for banks include implementation costs[1258] which diverge into other avenues such as developing new

[1252] Ibid page 5.
[1253] Dixit Joshi and Steve Morris, 'What is Basel IV?' https://www.db.com/newsroom_news/2018/what-is-basel-iv-en-11456.htm accessed 24 April 2018.
[1254] Ibid.
[1255] Huw Jones, 'Regulators to delay meeting in bid to reach bank capital deal' https://perma.cc/5ZCM-FN99 accessed 24 April 2018.
[1256] Philip Wackerbeck and others, 'Fourth Time Around? European Banks Confront "Basel IV"' https://www.strategyand.pwc.com/reports/fourth-time-around accessed 25 April 2018.
[1257] Ibid.
[1258] KPMG, 'The World Awaits: Basel 4 Nears Completion' https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2016/12/world-awaits-basel-4-nears-completion.pdf page 9 accessed 25 April 2018.

internal models, ensuring data is timely and accurate, and establishing internal management information which is used for external reporting. What can be ascertained is that the regulatory reforms made will have a substantial impact for banks and it may still pose much uncertainty and complexity for banks.[1259]

What do the 2017 papers mean for Basel III and the future of banks?

In light of some of the main revisions (and challenges) noted in the previous section, it is prudent to illustrate what the Basel Committee want to achieve by introducing the Basel III reforms.

As was stated earlier[1260] the finalised material published by the Basel Committee aims to restore credibility in relation to calculating RWA as well as improve comparability of banks capital ratios. With this in mind, the reforms put in place seek to:

- Improve standardised approaches
- Limit internal models
- Improve operation risk
- Introduce a new buffer for leverage ratio

[1259] Deloitte, 'Finalization of the Basel III Post-Crisis Reforms' https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/risk/lu-rna-finalization-basel-iii-post-crisis-regulatory-reform-08122017.pdf page 2 accessed 25 April 2018.
[1260] Page 415.

- Introduce a different output floor[1261]

First, the reforms aim to improve standardised approaches by making them not only more robust but also to allow for more risk sensitivity.[1262] Some examples include a better approach to residential mortgages which will now depend on the loan to value ratio of that particular mortgage, compared with the previous approach of a flat risk weight.[1263] This does, therefore, offer a more tailored approach rather than a blanket across all residential mortgages. Another example is that the improved standardised approaches will now apply specific risk weights to small and medium enterprises and their exposures. Again, this improvement has made Basel III more accurate and tailored toward specific risks.

Second, the finalised reforms seek to limit the use of internal models.[1264] For example, exposure to medium and large enterprises will now be calculated by fixed values compared with the previous approach of estimating with LGD and EAD.[1265]

[1261] European Parliament, 'Finalisation of Basel III Post-Crisis Reforms' http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/614486/IPOL_ATA(2017)614486_EN.pdf accessed 9 April 2019.

[1262] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf page 2 accessed 9 April 2019.

[1263] European Parliament, 'Finalisation of Basel III Post-Crisis Reforms' http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/614486/IPOL_ATA(2017)614486_EN.pdf accessed 9 April 2019.

[1264] The Basel Committee intend on achieving this by placing limits on certain inputs when calculating capital requirements while using the IRB approach for credit risk and this will be accomplished by not allowing the use of internal approaches for CVA risk and operation risk.

[1265] European Parliament, 'Finalisation of Basel III Post-Crisis Reforms' http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/614486/IPOL_ATA(2017)614486_EN.pdf accessed 9 April 2019.

Third, improvements have been made to the operational risk framework. Issues such as accounting for losses from misconduct or inferior controls were not adequately accounted for. Importantly here,

> 'The new standardised approach determines a bank's operational risk capital requirements based on two assumptions, namely that operational risk increases at an increasing rate with a bank's income, and that operational risk losses seen in the past go along with a higher likelihood of operational risk losses in the future'[1266]

Fourth, there is a new leverage ratio buffer for GSIBs. This is in addition to the leverage ratio discussed in Chapter 3, and can be seen to further assist (limit) the leverage of GSIBs.[1267] It is required that GSIBs must use Tier 1 capital and 50 percent of the GSIBs risk weighted requirements.[1268] This improvement is a positive move, for example it addresses the too big to fail problem, and adds an additional line of protection for GSIBs and the world economy.

Fifth, the change to output floor that was not updated since Basel I. The reform in this area now supports a level playing field by setting a limit on

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[1266] Ibid
[1267] Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf page 1 accessed 9 April 2019.
[1268] European Parliament, 'Finalisation of Basel III Post-Crisis Reforms' http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/614486/IPOL_ATA(2017)614486_EN.pdf page 2 accessed 9 April 2019.

regulatory capital benefits for a bank using internal models in relation to standardised approaches.[1269]

From an EU stance, the European Banking Authority has welcomed the reforms introduced by the Basel Committee.[1270] Amendments will be required in order to implement these changes into EU law through the CRR.[1271] Consultation will be required with other EU institutions as well as member states.[1272] At present it is not expected that the EU will look to require implementation of the Basel reforms until 2023 or 2024 with proposals coming forward around 2020.[1273] In respect of the United Kingdom, this will be, no doubt, the first time that the EU will proceed without participation of the United Kingdom due to the imminent departure, although it has been stated by HM Treasury that the United Kingdom is committed to implementing the Basel III reforms in a timely manner.[1274]

[1269] Ibid.
[1270] European Banking Authority, 'EBA Welcomes the Revised Basel Framework and Provides an Overview of its Impact in the EU' https://eba.europa.eu/-/eba-welcomes-the-revised-basel-framework-and-provides-an-overview-of-its-impact-in-the-eu accessed 9 April 2019.
[1271] European Commission, 'Banking Regulation: Commission Welcomes Basel Committee's Agreement on Post-Crisis Reforms' http://europa.eu/rapid/press-release_IP-17-5171_en.htm accessed 9 April 2019.
[1272] See European Parliament, 'Amending Capital Requirements: The 'CRD V Package'' http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/599385/EPRS_BRI%282017%29599385_EN.pdf accessed 9 April 2019 for recent developments.
[1273] Deloitte, 'Basel III: The Bank Capital marathon' https://blogs.deloitte.co.uk/financialservices/2018/03/basel-iii-the-bank-capital-marathon.html accessed 9 April 2019.
[1274] Gov.uk, 'Commission Consultation on Basel III Implementation – HM Treasury Response' https://www.gov.uk/government/publications/commission-consultation-on-basel-iii-implementation-hm-treasury-response accessed 9 April 2019.

In conclusion, it should not be forgotten what the Basel regulations are trying to accomplish and that is to limit financial crises through creating financial stability. Basel III has focused heavily on raising more capital and better quality capital.[1275] However, Pugsley argues that it would be brave to say that banking crises will be a thing of the past,[1276] and rightly so. Additionally, Pugsley questions that with a steady increase of regulatory bodies since the 1970s, will these revisions make any real difference? A valid point given that there have been several financial crises since the 1970s and regulation has not curtailed any of them. Examples include Black Monday 1987,[1277] the Asian crisis 1997,[1278] the Dotcom bubble 2000,[1279] or the recent financial crisis of 2008[1280] that has been the worst in modern banking history since the Great Depression of the 1930s. Regulation did not stop any of these financial crises and the author would stipulate and concur in part with Pugsley in that why will regulation stop future financial crises? The author would, however, form a different opinion and that regulation, including Basel III, is capable of

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[1275] McKinsey&Company, 'Basel "IV": What's Next for Banks?' https://www.mckinsey.com/~/media/mckinsey/business%20functions/risk/our%20insights/basel%20iv%20whats%20next%20for%20european%20banks/basel-iv-whats-next-for-banks.ashx page 6 accessed 24 April 2018.

[1276] Justin Pugsley, 'Basel IV's Done - Now Comes the Hard Part' http://www.thebanker.com/Banking-Regulation-Risk/Reg-Rage/Basel-IV-s-done-now-comes-the-hard-part?ct=true accessed 24 April 2018.

[1277] Simon Goodley, 'How Black Monday Sowed the Seeds for the Current Financial Crisis' *The Guardian* (London, 14 October 2012) https://www.theguardian.com/business/2012/oct/14/black-monday-sowed-seeds-financial-crisis accessed 24 April 2018.

[1278] The Economist, 'Ten Years On' https://www.economist.com/node/9432495 accessed 24 April 2018.

[1279] Jorn Madslien, 'Dotcom Bubble Burst: 10 Years On' http://news.bbc.co.uk/1/hi/business/8558257.stm accessed 24 April 2018.

[1280] Joel Havemann, 'The Financial Crisis of 2008' https://www.britannica.com/topic/Financial-Crisis-of-2008-The-1484264 accessed 24 April 2018.

limiting future financial crises, the important point is the substance of the regulation. This is forever changing and being enhanced, for this reason the author would suggest that regulation can be a key defender against financial crises and it needs to consist of the right material. A hard task and one which has been evolving for many decades.

Whilst Pugsley is right to a certain degree and that regulation has not stopped financial crises in the past and that it will be the same for the future, the author would state that the Basel regulations can only do so much; it primarily covers banks as has been the context of the research. That being said, other areas of banking need to be considered in which regulation is key. For instance shadow banking,[1281] an area that shows signs of weakness where full scrutiny of shadow firms is somewhat small compared to large banks. Pugsley comments, 'The problem with so strongly regulating one part of the financial system is that risks will naturally gravitate to where the rules are more lax or simply different'.[1282] This could be where the next financial crisis lingers and is currently laying dormant. If shadow banking does prove problematic, as could be the case in China,[1283] then it is only a matter of time before it surfaces and at

[1281] Shadow banking can be generally described as the leveraged non-bank investment channels that some banks use to place complex securitised loans off their balance sheet. See A Sheng and N C Soon, *Shadow Banking in China* (John Wiley & Sons Ltd 2016) 18-20 for brief discussion on what shadow banking is.
[1282] Justin Pugsley, 'Basel IV's Done - Now Comes the Hard Part' http://www.thebanker.com/Banking-Regulation-Risk/Reg-Rage/Basel-IV-s-done-now-comes-the-hard-part?ct=true accessed 24 April 2018.
[1283] Andrew Collier, 'China's Shadow Finance Time-Bomb Could Trigger Crisis' *Financial Times* (London, 26 June 2017) https://www.ft.com/content/a6086a9a-5059-11e7-bfb8-997009366969 accessed 25 April 2018.

present, as Wandhofer notes, regulators do not have the tools to protect[1284] and considering that a recent report suggested that shadow banking now accounts for 13 percent of total global financial assets,[1285] there is deep cause for concern. This example highlights that regulation is still very much required and the author would suggest that regulation needs to regularly evolve and improve. In turn it can be a preventive mechanism against financial crises. The Basel reforms are the next logical step for the Basel Committee. The author would not coin the new reforms made in the December 2017 papers as Basel IV as they are reforms to the Basel framework, at most Basel III.5. To reinforce this notion, Haynes states:

> 'Basel IV is arguably not a separate set of rules but the application of parts of Basel III. It seems to have arisen as a term by management consultants and lawyers seeking to create more interest in their services…'[1286]

What has happened over the last thirty years and in recent times has given the impression that regulation is needed more than it has ever been needed before. Whilst there is a vast amount of regulation that has been in place over the last few years since the financial crisis and since Basel

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[1284] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 272.
[1285] Caroline Binham, 'Shadow Banking Grows to More Than $45tn Assets Globally' *Financial Times* (London, 5 March 2018) https://www.ft.com/content/c45bf332-1e48-11e8-956a-43db76e69936 accessed 29 June 2018.
[1286] Private email, Professor Andrew Haynes, 10 December 2018.

I, it is obvious that regulation endeavours to stop financial crises. Wandhofer ponders as to whether will it be able to prevent the next financial crash, the answer being no;[1287] but the author would suggest that if the hard work continues then one day the Basel regulations and financial stability may be closer to perfection. Until then, the work continues.

Final thoughts

Basel III is an excellent framework for international standards on regulation, supervision and risk management of banks.[1288] What is clear since Basel I and the aftermath of the 2008 financial crisis, is that whilst there are still risks and shortcomings of Basel III and that policy and law from countries around the world come and go, the Basel regulations are here to stay and aim to make banking regulation stronger in order to fortify the international banking system. On this note, it is fitting to draw a close to the research with a quote given at the beginning of the research[1289] albeit slightly updated in part, however the mandate itself is the same:

[1287] R Wandhofer, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014) 262.
[1288] Supported by the Basel Core Principles. See, Bank for International Settlements, 'Core Principles for Effective Banking Supervision' https://www.bis.org/publ/bcbs230.pdf accessed 28 March 2019.
[1289] See beginning of the OVERVIEW section, Chapter 1 page 5.

> 'The BCBS is the primary global standard setter for the prudential regulation of banks and provides a forum for cooperation on banking supervisory matters. Its mandate is to strengthen the regulation, supervision and practices of banks worldwide with the purpose of enhancing financial stability'[1290]

So with the Basel Committee overseeing the implementation of the Basel regulations they will continue to strive for a better tomorrow. Ultimately it should not be forgotten that risk cannot be eliminated, it can only be minimised because if the elimination of risk was possible there would be no need for regulation.[1291] Keeping this in focus, it is poignant to end with the following quote by King:

> 'After almost a decade of reforms and new regulations, and protestations by central bankers and regulators that the banking system is now incomparably safer than before the crisis, it is troubling that the Italian banking system has again come under scrutiny and is clearly in need of recapitalisation, that Deutsche Bank has been so fragile with European bank share prices falling in 2016, and that such well-respected economists as former US Treasury Secretary Larry Summers have concluded that financial

[1290] Bank for International Settlements, 'Basel Committee Charter' https://www.bis.org/bcbs/charter.htm accessed 29 June 2018.
[1291] M Ojo, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305, 312.

markets regard the banking sector today as no safer than before the crisis'[1292]

[1292] M King, *The End of Alchemy: Money, Banking and the Future of the Global Economy* (Abacus 2017) xxv.

Bibliography

Books

Alexander K, Dhumale R and Eatwell J, *Global Governance of Financial Systems: The International Regulation of Systemic Risk* (Oxford University Press 2006)

Balthazar L, *From Basel 1 to Basel 3: The Integration of State of the Art Risk Modelling in Banking Regulation* (Palgrave Macmillan 2006)

Barfield R, *A Practitioner's Guide to Basel III and Beyond* (Thomson Reuters 2011)

Barth J R, Caprio Jr G and Levine R, *Rethinking Bank Regulation: Till Angels Govern* (Cambridge University Press 2008)

Baumgartner O, *Basel 3 Capital Requirements - Overview and Critical Evaluation* (Grin Verlag 2012)

Bessis J, *Risk Management in Banking* (4th edn, John Wiley & Sons Ltd 2015)

Cannata F and Quagliariello M, *Basel III and Beyond: A Guide to Banking Regulation after the Crisis* (Risk Books 2011)

Chorafas D N, *Basel III, the Devil and Global Banking* (Palgrave Macmillan 2012)

Choudhry M, *An Introduction to Value-at-Risk* (5th edn, John Wiley & Sons Ltd 2013)

Cranston R, *Principles of Banking Law* (2nd edn, Oxford University Press 2002)

Cranston R and others, *Principles of Banking Law* (3rd edn, Oxford University Press 2017)

Crouhy M, Galai D and Mark R*, The Essentials of Risk Management* (2nd edn, McGraw-Hill Education 2014)

Danielsson J, *Financial Risk Forecasting* (John Wiley & Sons Ltd 2011)

Davis B*, Basel I and Basel II: Understanding Policy and Process* (VDM Verlag Dr. Muller Aktiengesellschaft & Co. KG 2008)

Docherty A and Viort F, *Better Banking* (John Wiley & Sons Ltd 2014)

Gleeson S, *International Regulation of Banking Basel II: Capital and Risk Requirements* (Oxford University Press 2010)

Goodhart C, *The Basel Committee on Banking Supervision: A History of the Early Years 1974-1997* (Cambridge University Press 2011)

Gottschalk R, *The Basel Capital Accords in Developing Countries: Challenges for Development Finance* (Palgrave Macmillan 2010)

Gup B E, *The New Basel Capital Accord* (Thomson 2004)

Haynes A, *The Law Relating to International Banking* (Bloomsbury Professional 2010)

Hemraj M, *Credit Rating Agencies* (Springer International Publishing 2015)

King M, *The End of Alchemy: Money, Banking and the Future of the Global Economy* (Abacus 2017)

Kolb R W, *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future* (John Wiley & Sons, Inc 2010)

Langohr H and Langohr P, *The Rating Agencies and Their Credit Ratings: What They Are, How They Work and Why They are Relevant* (John Wiley & Sons Ltd 2009)

Lowenstein R, *When Genius Failed* (Fourth Estate 2001)

Lowry J and Reisberg A*, Petter's Company Law: Company Law & Corporate Finance* (4th edn, Pearson Education Limited 2012)

Matz L, *Liquidity Risk Measurement And Management* (Xlibris 2011)

Moosa I A, *Good Regulation, Bad Regulation: The Anatomy of Financial Regulation* (Palgrave Macmillan 2015)

Niesen M and Roth S, *Basel IV the Next Generation of Risk Weighted Assets* (Wiley-VCH Verlag & Co. 2017)

Pelaez C M and Pelaez C A, *International Financial Architecture* (Palgrave Macmillan 2005*)*

Petersen A and Mukududdem-Petersen J, *Basel III Liquidity Regulation and Its Implications* (Business Expert Press, New York 2014)

Resti A, *Pillar II in the New Basel Accord: The Challenge of Economic Capital (Risk Books 2008)*

Salter M and Mason J, *Writing Law Dissertations* (Pearson Longman 2007)

Sheng A and Soon N C, *Shadow Banking in China: An Opportunity for Financial Reform* (John Wiley & Sons Ltd 2016)

Quillin B, *International Financial Co-Operation: Political Economics of Compliance with the 1988 Basel Accord* (Routledge 2014)

Wandhofer R, *Transaction Banking and the Impact of Regulatory Change: Basel III and Other Challenges for the Global Economy* (Palgrave Macmillan 2014)

Wong M C Y, *Bubble Value at Risk: A Countercyclical Risk Management Approach* (Revised Edition, John Wiley & Sons Singapore Pte. Ltd 2013)

Walker G A, *International Banking Regulation Law, Policy and Practice* (Kluwer Law International 2001)

Walker G, Purves R and Blair M, *Financial Services Law* (4th edn, Oxford University Press 2018)

Articles

Abdullah A and Khadaroo I, 'Addressing the Financial Crisis: Perceived Effectiveness of Basel III' (2014) 29(3) JIBLR 135

Ahmed J M, 'A Conceptual Framework for the Basel Accords Based Regulation' (2016) 24(1) JFRC 90

Angermuller N O, 'Basel III: Implications of Risk Management Requirements in Germany' (2012) 27(12) JIBLR 509

Angermuller N O and Zeranski S, 'Supervisory Review and Assessment of LCR Stress Scenarios with NCO Pre-Tests' (2016) 31(10) JIBLR 527

Baber G, 'Basel III Implementation and the European Union: The Proposed Capital Requirements Regulation (CRR)' (2012) 33(12) Comp Law 386

Barr M S and Miller G P, 'Global Administrative Law: The View from Basel' (2006) 17(1) EJIL 15

Burchi A, 'Capital Requirements for Market Risks: Value-at-Risk Models and Stressed-VaR After the Financial Crisis' (2013) 21(3) JFR & C 284

Ciro T and Longo M, 'The Global Financial Crisis: Causes and Implications for Future Regulation: Part 1.' (2009) 24(12) JIBLR 599

Clarkson R S, 'Actuarial Insights into the Global Banking Catastrophe' (2009) 17(4) JFRC 381

Coskun D, ’Credit-Rating Agencies in the Basel II Framework: Why the Standardised Approach is Inadequate for Regulatory Capital Purpose‘ (2010) 25(4) JIBLR 157

Davies P, ’Liquidity Safety Nets for Banks‘ (2013) 13(2) JCLS 287

EU Focus, ’Commission Adopts Detailed Prudential Rules for Banks and Insurers‘ (2014) 325 EU Focus 1

Fawcett A, ’New Basel Accord Raises Questions‘ (2003) 33 Euro. Law. 12

Fischer DH, ’The European Rating Fund‘ (2018) 26(1) JFRC 72

Foot M, ’Operational Risk Management for Financial Institutions‘ (2002) 10(4) JFRC 313

Gleeson S, ’A Journey from Basle to Brussels‘ (1999) 14(9) JIBL 275

Goddard J, Molyneux P and Wilson J O S, ’The Financial Crisis in Europe: Evolution, Policy Responses and Lessons for the Future‘ (2009) 17(4) JFRC 362

Hall A A, ’International Banking Regulation into the 21st Century: Flirting with Revolution‘ (2000) 2(6) JIFM 216

Hurst T, ’The Role of Credit Rating Agencies in the Current Worldwide Financial Crisis‘ (2009) 30(2) Comp Law 61

Jones R, ’Mitigating Intraday Liquidity Risk: Limitations of the Supervisory Response‘ (2016) 4 JIBFL 199

Kellermann K and Schlag C, 'Occupy Risk Weighting: How the Minimum Leverage Ratio Dominated Capital Requirements - A Swiss Example' (2013) 21(4) JFR & C 353

Larosiere J de, 'Structural Bank Reforms: An Illusory Solution' (2015) 10 JIBFL 636

Lee E, 'Basel III: Post-Financial Crisis International Financial Regulatory Reform' (2013) 28(11) JIBLR 433

Lee E, 'The Soft Law Nature of Basel III and International Financial Regulation' (2014) 29(10) JIBLR 603

McFarland S T and Maysami R C, 'Banking Law and Regulation in the United Arab Emirates: Current Status, Recent Developments, and Prospects for the Future' (2015) 30(7) JIBLR 393

McKee M and Barker C, 'Basel III Announced' (2010) 73(Dec) Euro News 6

Morgan H M, 'Credit Rating Agencies and Regulatory Reform: The Case of Moody's Investors Services' (2011) 26(8) JIBLR 389

Murphy D, 'The Rising Risk and Roles of Financial Collateral' (2014) 1 JIBFL 3

Ojo M, 'Risk Management by the Basel Committee: Evaluating Progress made from the 1988 Accord to Recent Developments' (2010) 18(4) JFR & C 305

Oldani C, 'Global Financial Regulatory Reforms and Sovereign's Exemption' (2018) 26(2) JFRC 190

Petitjean M, 'Bank Failures and Regulation: A Critical Review' (2013) 21(1) JFR & C 16

Pinedo A T, 'Fewer Options for Capital-Raising by Banks: More Stability?' (2015) 11 JIBFL 671

Seitz N and others, 'Bank Integrity: The Case of Subprime Lending' (2009) 30(9) Comp. Law. 271

Schoenmaker D, 'What Happened to Global Banking After the Crisis?' (2017) 25(3) JFRC 241

Schwerter S, 'Basel III''s Ability to Mitigate Systemic Risk' (2011) 19(4) JFR & C 337

Thieffry G, 'Basel III and Commodity Trade Finance: An Update.' (2016) 31(3) JIBLR 124

Ugeux G, 'Building a European Capital Markets Union: The Need for Liquidity and Focus' (2016) 31(6) JIBLR 314

Official Published Sources

Parliament, 'Credit Rating Agencies', Session 2010-2012 February 2012, Point 2'

http://www.publications.parliament.uk/pa/cm201012/cmselect/cmtreasy/writev/1866/cra16.htm accessed 23 November 2014

Parliament, 'Economic Affairs Committee - Second Report Banking Supervision and Regulation'

http://www.publications.parliament.uk/pa/ld200809/ldselect/ldeconaf/101/10109.htm accessed 13 April 2016

Parliament, 'Sovereign Credit Ratings: Shooting the Messenger?'

https://www.parliament.uk/documents/lords-committees/eu-sub-com-a/Creditrating/CRA%20Corrected%20and%20Evidence%20Final.pdf accessed 29 June 2018

Other Published Sources

Alloway T, 'Modelling: Normal Distribution is not Always the Norm' *Financial Times* (London, 13 April 2012) http://ft.com/cms/s/0/67d05d30-7e88-11e1-b7e7-00144feav49a.html?#axzz4HZtJ6Myt accessed 17 August 2016

Armitstead L, 'RBS Sued for 'Untrue and Misleading' Rights Issue in 2008' *The Telegraph* (London, 28 March 2013) www.telegraph.co.uk/finance/newsbysector/banksandfinance/9960080/RBS-sued-for-untrue-and-misleading-rights-issue-in-2008.html accessed 15 November 2017

Bawden T, 'France Feels the Economic Force of the Credit Rating Agencies' *The Guardian* (London, 12 August 2011) http://www.theguardian.com/business/2011/aug/12/france-economy-credit-rating-agencies accessed 15 November 2017

Binham C, 'Banks Score Victory on use of Ratings in Capital Calculations' *Financial Times* (London, 10 December 2015) https://www.ft.com/content/acb8f50a-9ea6-11e5-8ce1-f6219b685d74 accessed 9 December 2016

Caroline Binham, 'Shadow Banking Grows to More Than $45tn Assets Globally' *Financial Times* (London, 5 March 2018) https://www.ft.com/content/c45bf332-1e48-11e8-956a-43db76e69936 accessed 29 June 2018

Binham C and Dunkley E, 'Regulators Get Ready to Authorise 'Ringfenced' UK Banks' *Financial Times* (London, 19 August 2017) https://www.ft.com/content/5ca81a48-8372-11e7-a4ce-15b2513cb3ff accessed 12 March 2018

Binham C and Tetlow G, 'Bank of England Tells Lenders to Increase Capital Buffers by £11.4bn' *Financial Times* (London, 27 June 2017) https://www.ft.com/content/9bc99294-5b1b-11e7-9bc8-8055f264aa8b accessed 19 April 2018

Booth P, 'Lessons from History Show Self-Regulation to be the Best Kind of Control' *The Telegraph* (London, 8 August 2010) https://www.telegraph.co.uk/finance/comment/7933318/Lessons-from-history-show-self-regulation-to-be-the-best-kind-of-control.html accessed 29 June 2018

Campbell I, 'Excess Liquidity Thesis Gains Traction as Financial Markets Soar' *The Telegraph* (London, 6 August 2009) https://www.telegraph.co.uk/finance/breakingviewscom/5982796/Excess-liquidity-thesis-gains-traction-as-financial-markets-soar.html accessed 19 April 2018

Chakrabortty A, 'Time to Take Control of the Credit Rating Agencies' *The Guardian* (London, 16 January 2012) https://www.theguardian.com/commentisfree/2012/jan/16/time-control-credit-rating-agencies accessed 10 February 2017

Clark A, 'Bank Chief Blames Rumours and Market Fixers for Bear's Collapse' *The Guardian* (New York, 4 April 2008) http://www.theguardian.com/business/2008/apr/04/bearstearns.creditcrunch accessed 3 March 2016

Collier A, 'China's Shadow Finance Time-Bomb Could Trigger Crisis' *Financial Times* (London, 26 June 2017) https://www.ft.com/content/a6086a9a-5059-11e7-bfb8-997009366969 accessed 25 April 2018

Creswell J and Bowley G, 'Ratings Firms Misread Signs of Greek Woes' *New York Times* (New York, 29 November 2011) https://www.nytimes.com/2011/11/30/business/ratings-firms-misread-signs-of-greek-woes.html accessed 23 May 2018

Croft J 'Value at Risk: The Danger of Relying too Much on Only One Tool' *Financial Times* (London, 21 March 2011) http://www.ft.com/cms/s/0/79752608-5371-11e0-86e6-00144feab49a.html#axzz4H6rFFB26 accessed 12 August 2016

Dash E, 'Citigroup Resolves Claims That it Helped Enron Deceive Investors' *New York Times* (New York, 27 March 2008) https://www.nytimes.com/2008/03/27/business/27enron.html for background information.

Dunkley J, 'Rating Agencies 'Must be Independent'' *The Telegraph* (London, 10 February 2012) https://www.telegraph.co.uk/finance/newsbysector/banksandfinance/9074991/Rating-agencies-must-be-independent.html accessed 11 July 2018

Duyne A van, 'Reform of Rating Agencies Poses Dilemma' *Financial Times* (New York, 10 June 2010) http://www.ft.com/cms/s/0/5616f5ce-74f6-11df-aed7-00144feabdc0.html?ft_site=falcon&desktop=true#axzz4T0QyvQMw accessed 16 December 2016

Ebrahimi H, 'LTCM Founder John Meriwether Returns with Third Fund' *The Telegraph* (London, 5 October 2010) http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/8042233/LTCM-founder-John-Meritwether-returns-with-third-fund.html accessed 16 November 2016

Elliott L, 'Banks Now Have More Liquid Assets but Solvency Threat Remains' *The Guardian* (London, 3 July 2012) https://www.theguardian.com/business/economics-blog/2012/jul/03/banking-industry-liquidity-quality-assets accessed 29 June 2018

Financial Times, 'Ringfencing will Help in the Next Banking Crisis' *Financial Times* (London, 10 January 2017) https://www.ft.com/content/fddb110a-d746-11e6-944b-e7eb37a6aa8e accessed 12 March 2018

Fleming S, 'Banks Face Restrictions on use of Rating Agencies in Risk Assessment' *Financial Times* (London, 22 December 2014) https://www.ft.com/content/02f2506a-89fe-11e4-8daa-00144feabdc0 accessed 14 April 2016

Fleming S and Brogan B, 'Greed Fuelled the Crash: How City Fat Cats Took Home £17bn Bonuses… As Their Banks Crumbled' *Daily Mail* (London, 14 October 2008) http://www.dailymail.co.uk/news/article-1077120/Greed-fuelled-crash-How-city-fat-cats-took-home-17bn-bonuses--banks-crumbled.html accessed 19 March 2018

Foley S, 'Issuer Payment: Model Resistant to Reform' *Financial Times* (London, 14 January 2013) https://www.ft.com/content/5a9d7522-5e3d-11e2-a771-00144feab49a accessed 23 May 2018

Goodley S, 'How Black Monday Sowed the Seeds for the Current Financial Crisis' *The Guardian* (London, 14 October 2012) https://www.theguardian.com/business/2012/oct/14/black-monday-sowed-seeds-financial-crisis accessed 24 April 2018

Hildebrand P, 'Hazardous Non-Performing Loans Obstruct Europe's Banking Union' *Financial Times* (London, 20 July 2017) https://www.ft.com/content/5dd6562e-662a-11e7-9a66-93fb352ba1fe accessed 12 March 2018

Jenkins P and Shafer D, 'Europe's Banks Turn to Capital Raising to Meet Basel III' *Financial Times* (London, 13 May 2013) http://www.ft.com/cms/s/0/4b1e76ce-bbb1-11e2-a4b4-00144feab7de.html#axzz42OtmlFUI accessed 9 March 2016

Jones S, 'Meriwether's JWM Partners Winds Down Flagship Fund' *Financial Times* (London, 8 July 2009) https://www.ft.com/content/21a6bbee-6c00-11de-9320-00144feabdc0 accessed 16 November 2016

Jr Oppel A R and Sorkin R A, 'Enron's Collapse: The Overview; Enron Collapses as Suitor Cancels Plans for Merger' *New York Times* (New York, 29 November 2001) http://www.nytimes.com/2001/11/29/business/enron-s-collapse-the-overview-enron-collapses-as-suitor-cancels-plans-for-merger.html accessed 25 June 2015

Kingsley P, 'How Credit Rating Agencies Rule the World' *The Guardian* (London, 15 February 2012) https://www.theguardian.com/business/2012/feb/15/credit-ratings-agencies-moodys accessed November 2017

Maclachlan F C, 'Market Discipline in Bank Regulation Panacea or Paradox?' *The Independent* (London, Fall 2001) http://www.independent.org/pdf/tir/tir_06_2_maclachlan.pdf accessed 15 March 2018

Martin B, 'Lloyds Returns to Full Private Ownership After Government Sells Down Remaining Shares' *The Telegraph* (London, 17 May 2017) www.telegraph.co.uk/business/2017/05/16/lloyds-passes-historic-milestone-returns-full-private-ownership/ accessed 21 September 2017

Masters B, Alloway T and Nasiripour S, 'Banks Face Removal of Capital Loophole' *Financial Times* (London, New York, Washington, 24 March 2013) https://www.ft.com/content/f826e6d8-946c-11e2-9487-00144feabdc0 accessed 6 January 2016

Masters B, 'Banks to Hold More Capital Under Basel III' *Financial Times* (London, 25 July 2012) http://www.ft.com/cms/s/0/93c7415a-d672-11e1-ba60-00144feabdc0.html#axzz3xDQCpsRY accessed 14 January 2016

Masters B, 'Countries Fail to Enforce Basel Reforms' *Financial Times* (London, 18 October 2011)http://www.ft.com/cms/s/0/50f40604-f984-11e0-bf8f-00144feab49a.html#axzz3cl4p67AF accessed 11 June 2015

Mathiason N, 'Three Weeks That Changed the World' *The Guardian* (London, 28 December 2008) http://theguardian.com/business/2008/dec/28/markets-credit-crunch-banking-2008 accessed 8 May 2015

McLannahan B, 'How Jamie Dimon Came to Rue His Bear Stearns Deal' *Financial Times* (New York, 15 March 2018) https://www.ft.com/content/6e488a94-270a-11e8-b27e-cc62a39d57a0 accessed 14 September 2018.

Milne R and Oakley D, 'Sovereign Debt: Hard to Credit' *Financial Times* (London, 27 March 2011) https://www.ft.com/content/9e1f1da2-58ac-11e0-9b8a-00144feab49a accessed 15 November 2017

Moodie A, 'Credit Rating Agencies are Miscalculating Risks of Climate Change, Reports Find' *The Guardian* (London, 25 June 2015) https://www.theguardian.com/sustainable-business/2015/jun/25/credit-rating-agencies-risks-climate-change-report-finance accessed 17 September 2018.

Morris N and O'Grady S, 'This is the Worst Recession for Over 100 Years' *The Independent* (London, 10 February 2009) https://www.independent.co.uk/news/uk/politics/this-is-the-worst-recession-for-over-100-years-1605367.html accessed 25 May 2018

Noonan L, 'New Bank Safety Plans Criticised for Encouraging Risky Loans' *Financial Times* (London, 6 June 2016) https://www.ft.com/content/e869883a-2bf5-11e6-bf8d-26294ad519fc accessed 15 March 2018

Norris F, 'The Regulatory Failure Behind the Bear Stearns Debacle' *New York Times* (New York, 4 April 2008) https://www.nytimes.com/2008/04/04/business/04norris.html accessed 18 June 2018

Partnoy F, 'Do Away with Rating-Based Rules' *Financial Times* (London, 8 July 2008) http://www.ft.com/cms/s/0/2f2af9dc-4d5d-11dd-8143-000077b07658.html?ft_site=falcon&desltop=true#axzz4SL3BMk5r accessed 9 December 2016

Popper N, 'Wall St. Redux: Arcane Names Hiding Big Risk' *New York Times* (New York, 18 April 2013) https://www.nytimes.com/2013/04/19/business/banks-revive-risky-loans-and-mortgages.html accessed 19 April 2018

The Guardian, 'Japan's 'Quintuple Dip' Recession Delivers a Fresh Blow to Abenomics' *The Guardian* (London, 16 November 2015) http://www.theguardian.com/world/2015/nov/16/japan-enters-fifth-recession-in-seven-years-in-latest-blow-for-abenomics accessed 18 November 2015

Rodrigues J, 'Barings Collapse at 20: How Rogue Trader Nick Leeson Broke the Bank' *The Guardian* (London, 24 February 2015) http://www.theguardian.com/business/from-the-archive-blog/2015/feb/24/nick-leeson/barings-bank-1995-20-archive accessed 19 June 2015

Romero S and Atlas R D 'Worldcom's Collapse: The Overview; Worldcom Files for Bankruptcy; The Largest U.S. Case' *New York Times* (New York, 22 July 2002) http://www.nytimes.com/2002/07/22/us/worldcom-s-collapse-the-overview-worldcom-files-for-bankruptcy-largest-us-case.html accessed 25 June 2015

Russel J, 'France Stripped of Prized 'AAA' Credit Rating by Moody's' *The Telegraph* (London, 19 November 2012) https://www.telegraph.co.uk/finance/financialcrisis/9689457/France-stripped-of-prized-AAA-credit-rating-by-Moodys.html accessed 17 September 2018.

Santoro M A, 'Would Better Regulations Have Prevented the London Whale Trades?' *The New Yorker* (New York, 21 August 2013) https://www.newyorker.com/business/currency/would-better-regulations-have-prevented-the-london-whale-trades accessed 11 April 2018

Smyth J, 'Australian Banks Urged to Boost Capital Holdings' *Financial Times* (Sydney, 7 December 2014) http://www.ft.com/cms/s/0/44012108-7dbf-11e4-bb0a-00144feabdc0.html#axzz3ckS6r92J accessed 11 June 2015

Teitelbaum H, 'NSFR Implementation Uncertain After Basel III Compromise on LCR Phase-in' *Financial Times* (London, 22 January 2013) http://www.ft.com/cms/s/2/fcb4fe7c-64c6-11e2-ac53-00144feab49a.html?ft_site=falcon&desktop=true#axzz4QqFwVaXC accessed 23 November 2016

The Hindu Business Line, 'RBI Extends Deadline to Implement Basel III Norms to 2019' *The Hindu Business Line* (Mumbai, 27 March 2014) http://www.thehindubusinessline.com/economy/policy/rbi-extends-deadline-to-implement-basel-iii-norms-to-2019/article5840399.ece accessed 9 March 2016

Titcomb J, 'Barings: The Collapse That Erased 232 Years of History' *The Telegraph* (London, 23 February 2015) http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/11426501/Barings-the-collapse-that-erased-232-years-of-history.html accessed 25 June 2015

Treanor J, 'Toxic shock: How the Banking Industry Created a Global Crisis' *The Guardian* (London, 8 April 2008) https://www.theguardian.com/business/2008/apr/08/creditcrunch.banking accessed 10 February 2017

Quinn J, 'Bankers to Receive Huge Bonuses Despite Financial Crisis' *The Telegraph* (New York, 15 April 2009) http://www.telegraph.co.uk/finance/recession/5154915/Bankers-to-receive-huge-bonuses-despite-financial-crisis.html accessed 30 October 2015

Wellink N, 'Basel II is Sophisticated and Sorely Needed' *Financial Times* (London, 9 April 2008) https://www.ft.com/content/868f7c42-0637-11dd-802c-0000779fd2ac accessed 15 March 2018

Wolf M, 'Lessons to be Learnt from the Financial Crisis' *Financial Times* (London, 1 July 2018) https://www.ft.com/content/ddea2c54-478b-11dd-93ca-000077b07658 accessed 10 April 2019

Electronic Material

Acharya V V and Mora N, 'A Crisis of Banks as Liquidity Providers' http://pages.stern.nyu.edu/~sternfin/vacharya/public_html/pdfs/WP_AM_070913.pdf accessed 19 April 2018

Adams T, 'Is Blaming AAA Investors Wall-Street Serving PR?' http://www.nakedcapitalism.com/2009/12/is-blaming-aaa-investors-wall-street-serving-pr.html accessed 10 February 2017

Alessi C, 'The Basel Committee on Banking Supervision' http://www.cfr.org/banks-and-banking/basel-committee-banking-supervision/p28694 accessed 3 March 2016

Alvarez A and others, 'Liquidity: Managing an Undervalued Resource in Banking After the Crisis of 2007-2008' http://www.mckinsey.com/client_service/risk/latest_thinking/working_papers_on_risk accessed 10 November 2015.

Ashby S, 'The 2007-09 Financial Crisis: Learning the Risk Management Lessons' https://www.nottingham.ac.uk/business/businesscentres/crbfs/documents/researchreports/paper65.pdf accessed 19 April 2018

Bailey A, 'The Capital Adequacy of Banks: Today's Issues and What We Have Learned From the Past' https://www.bankofengland.co.uk/-/media/boe/files/speech/2014/the-capital-adequacy-of-banks-todays-issues-and-what-we-have-learned-from-the-past accessed 23 May 2018

Bank for International Settlements, 'A Brief History of the Basel Committee' http://www.bis.org/bcbs/history.pdf accessed 7 October 2014

Bank for International Settlements, 'A New Capital Adequacy Framework' https://www.bis.org/publ/bcbs50.pdf accessed 3 July 2018

Bank for International Settlements, 'About BIS' http://www.bis.org/about/index.htm?l=2 accessed 9 October 2014

Bank for International Settlements, 'About the Basel Committee' http://www.bis.org/bcbs/about.htm accessed 8 October 2014

Bank for International Settlements, 'Amendment to the Capital Accord to Incorporate Market Risks' http://www.bis.org/publ/bcbs24.pdf accessed 1 January 2015

Bank for International Settlements, 'Bank Failures in Mature Economies' http://www.bis.org/publ/bcbs_wp13.pdf accessed 25 February 2015

Bank for International Settlements, 'Bank Resolution Framework – Executive Summary' https://www.bis.org/fsi/fsisummaries/brf.pdf accessed 8 April 2019

Bank for International Settlements, 'Basel Committee Charter' https://www.bis.org/bcbs/charter.htm accessed 29 June 2018

Bank for International Settlements, 'Basel Committee on Banking Supervision Reforms - Basel III'

http://www.bis.org/bcbs/basel3/b3summarytable.pdf accessed 13 October 2015

Bank for International Settlements, 'Basel II: International Convergence of Capital Measurements and Capital Standards: A Revised Framework' http://www.bis.org/publ/bcbs107.htm accessed 7 October 2014

Bank for International Settlements, 'Basel II: International Convergence of Capital Measurements and Capital Standards: A Revised Framework' https://www.bis.org/publ/bcbs118.htm point 17 accessed 14 March 2018

Bank for International Settlements, 'Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework - Comprehensive Version' https://www.bis.org/publ/bcbs128.pdf accessed 2 April 2015

Bank for International Settlements, 'Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems' http://www.bis.org/publ.bcbs189_dec2010.pdf accessed 21 October 2015

Bank for International Settlements, 'Basel III: Finalising Post-Crisis Reforms' https://www.bis.org/bcbs/publ/d424.pdf accessed 21 March 2018

Bank for International Settlements, 'Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring' http://www.bis.org/publ/bcbs188.pdf accessed 13 October 2015

Bank for International Settlements, 'Basel III Leverage Ratio Framework - Executive Summary' https://www.bis.org/fsi/fsisummaries/b3_lrf.htm accessed 19 April

Bank for International Settlements, 'Basel III Phase-in Arrangements' http://bis.org/bcbs/basel3/basel3_phase_in_arrangements/pdf accessed 13 October 2015

Bank for International Settlements, 'Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools' https://www.bis.org/publ/bcbs238.pdf accessed 23 May 2018

Bank for International Settlements, 'BNP Paribas' Response to the Discussion Paper 258 the Regulatory Framework: Balancing Risk-Sensitivity, Simplicity and Comparability' https://www.bis.org/publ/bcbs258/bnpparibas.pdf accessed 15 March 2018

Bank for International Settlements, 'Capital Floors: The Design of a Framework Based on Standardised Approaches' https://www.bis.org/bcbs/publ/d306.pdf accessed 14 April 2016

Bank for International Settlements, 'Capital Requirements and Bank Behaviour: The Impact of the Basle Accord' http://www.bis.org/publ/bcbs_wp1.pdf accessed 11 January 2015

Bank for International Settlements, 'Comparative Analyses of Expected Shortfall and Value-at-Risk Under Market Stress' https://www.bis.org/cgfs/conf/mar02p.pdf accessed 11 April 2018

Bank for International Settlements, 'Compliance and the Compliance Function in Banks' https://www.bis.org/publ/bcbs113.pdf 15 March 2018

Bank for International Settlements, 'Comprehensive Response to the Global Banking Crisis' https://www.bis.org/press/p090907.htm accessed 10 April 2019

Bank for International Settlements, 'Core Principles for Effective Banking Supervision' https://www.bis.org/publ/bcbs230.pdf accessed 28 March 2019.

Bank for international Settlements, 'Countercyclical Capital Buffer (CCyB)' https://www.bis.org/bcbs/ccyb/ accessed 19 April 2018

Bank for International Settlements, 'Counterparty Risk and Contract Volumes in the Credit Default Swap Market' https://www.bis.org/publ/qtrpdf/r_qt1012g.pdf accessed 19 April 2018

Bank for International Settlements, 'Financial Crises and Bank Funding: Recent Experience in the Euro Area' https://www.bis.org/publ/work406.pdf accessed 19 April 2018

Bank for International Settlements, 'Finalising Post-Crisis Reforms: An Update' https://www.bis.org/bcbs/publ/d344.pdf accessed 8 April 2019

Bank for International Settlements, 'Framework for the Evaluation of Internal Control Systems' https://www.bis.org/publ/bcbs33.pdf accessed 9 April 2019

Bank for International Settlements, 'Fundamental Review of the Trading Book' http://www.bis.org/publ/bcbs219.pdf accessed 23 November 2014

Bank for International Settlements, 'Fundamental Review of the Trading Book: A Revised Market Risk Framework' http://www.bis.org/publ/bcbs265.pdf accessed 24 February 2017

Bank for International Settlements, 'Fundamental Review of the Trading Book: Outstanding Issues' http://www.bis.org/bcbs/publ/d305.pdf accessed 31 March 2017

Bank for International Settlements, 'Governors and Heads of Supervision Finalise Basel III Reforms' https://www.bis.org/press/p171207.htm accessed 24 April 2018

Bank for International Settlements, 'High-Level Summary of Basel III Reforms' https://www.bis.org/bcbs/publ/d424_hlsummary.pdf accessed 20 April 2018

Bank for International Settlements, 'History of the Basel Committee' http://www.bis.org/bcbs/history.htm accessed 21 June 2016

Bank for International Settlements, 'History of the Basel Committee' https://www.bis.org/bcbs/history.htm#basel_ii accessed 14 March 2018

Bank for International Settlements, http://www.bis.org/bcbs/basel3/b3summarytable.pdf accessed 22 November 2014

Bank for International Settlements, http://www.bis.org/bcbs/basel3/basel3_phase_in_arrangements.pdf accessed 22 November 2014

Bank for International Settlements, http://www.bis.org/index.htm accessed 7 October 2014

Bank for International Settlements, 'Implementation of Basel II: Practical Considerations' https://www.bis.org/publ/bcbs109.pdf accessed 2 April 2015

Bank for International Settlements, 'Implications of Basel III for Capital, Liquidity and Profitability of Banks' https://www.bis.org/review/r120305b.pdf accessed 19 April 2018

Bank for International Settlements, 'Implications of FinTech Developments for Banks and Bank Supervisors' https://www.bis.org/bcbs/publ/d431.pdf accessed 11 April 2019

Bank for International Settlements, 'Initiatives in Response to the Crisis by the Basel Committee' https://www.bis.org/press/p090330.htm accessed 10 April 2019

Bank for International Settlements, 'Instructions for Basel III Monitoring' https://www.bis.org/bcbs/qis/biiiimplmoninstr_aug16.pdf page 22 accessed 26 march 2019.

Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards' http://www.bis.org/publ/bcbs04a.htm accessed 7 October 2014

Bank for International Settlements, 'International Convergence of Capital Measurements and Capital Standards: A Revised Framework Comprehensive Version' http://www.bis.org/publ/bcbs128.pdf accessed 2 Aril 2015

Bank for International Settlements, 'International Convergence of Capital Measurement and Capital Standards' (July 1988, Updated to April 1998) http://www.bis.org/publ/bcbsc111.pdf accessed 1 January 2015

Bank for International Settlements, 'International Framework for Liquidity Risk Measurement, Standards and Monitoring' http://www.bis.org/publ/bcbs165.pdf accessed 13 October 2015

Bank for International Settlements, 'International Regulatory Framework for Banks (Basel III)' http://www.bis.org/bcbs/basel3.htm accessed 13 October 2015

Bank for International Settlements, 'Jaime Caruana: Chairman of the Basel Committee Discusses Basel II' http://www.bis.org/review/r030915a.pdf accessed 20 May 2015

Bank for International Settlements, 'Liquidity Hoarding and the Financial Crisis: An Empire Evaluation' https://www.bis.org/bcbs/events/bhbibe/berrospide.pdf accessed 19 April 2018

Bank for International Settlements, 'Net Stable Funding Ratio (NSFR) - Executive Summary' https://www.bis.org/fsi/fsisummaries/nsfr.htm accessed 29 June 2018

Bank for International Settlements, 'Operational Risk - Supervisory Guidelines for the Advanced Measurement Approaches' https://www.bis.org/publ/bcbs196.pdf accessed 15 March 2018

Bank for International Settlements, 'Pillar 2 (Supervisory Review Process)' https://www.bis.org/publ/bcbsca08.pdf accessed 15 March 2018

Bank for International Settlements, ’Principles for Sound Liquidity Risk Management and Supervision - Consultative Document‘ http://www.bis.org/publ/bcbs138.htm accessed 14 October 2016

Bank for International Settlements, ’Principles for Sound Liquidity Risk Management and Supervision‘ http://www.bis.org/publ/bcbs144.pdf accessed 7 October 2016

Bank for International Settlements, ’Principles for the Sound Management of Operational Risk‘ http://www.bis.org/publ/bcbs195.pdf accessed 22 April 2015

Bank for International Settlements, ’Principles for the Supervision of Banks’ Foreign Establishments (May 1983)‘ http://www.bis.org/publ/bcbsc312.pdf accessed 11 January 2015

Bank for International Settlements, ’Principles of the Management of Credit Risk - consultative document‘ http://www.bis.org/publ/bcbs54.htm accessed 11 April 2015

Bank for International Settlements, ’Principles of the Management of Credit Risk‘ https://www.bis.org/publ/bcbsc125.pdf accessed 15 March 2018

Bank for International Settlements, ’Procyclicality - What it Means and What can be Done‘ www.bis.org/review/r090805d.pdf accessed 13 August 2015

Bank for International Settlements, ’Proposals for International Convergence of Capital Measurement and Capital Standards‘ http://www.bis.org/publ/bcbs03a.pdf accessed 21 October 2015

Bank for International Settlements, ’Supervisory Lessons to be Drawn from the Asian Crisis‘ https://www.bis.org/publ/bcbs_wp2.pdf accessed 9 April 2019

Bank for International Settlements, ’Overview of the Amendment to the Capital Accord to Incorporate Market Risks‘ http://www.bis.org/publ/bcbs23.pdf accessed 1 January 2015

Bank for International Settlements, ’Range of Methodologies for Risk and Performance Alignment of Remuneration‘ https://www.bis.org/publ/bcbs194.pdf accessed 8 April 2019

Bank for International Settlements, ’Report to the Governors on the Supervision of Banks’ Foreign Establishments‘ http://www.bis.org/publ/bcbs00a.pdf accessed 23 September 2015

Bank for International Settlements, ’Revisions to the Basel II Market Risk Framework‘ http://www.bis.org/publ/bcbs158.pdf accessed 8 May 2015

Bank for International Settlements, ’Revision to the Standardised Approach for Credit Risk‘ https://www.bis.org/bcbs/publ/d307.pdf accessed 14 April 2016

Bank for International Settlements, ’Revision to the Standardised Approach for Credit Risk‘ Second Consultative Document https://www.bis.org/bcbs/publ/d347.pdf accessed 14 April 2016

Bank for International Settlements, ’Risk Management Principles for Electronic Banking‘ https://www.bis.org/publ/bcbs98.pdf accessed 11 April 2019

Bank for International Settlements, ’Sound Practices for Managing Liquidity in Banking Organisations‘ http://www.bis.org/publ/bcbs69.pdf accessed 14 October 2016

Bank for International Settlements, ’Sound Practices for Management and Supervision of Operational Risk‘ https://www.bis.org/publ/bcbs96.pdf accessed 9 April 2019

Bank for International Settlements, ’Strengthening the Resilience of the Banking Sector‘ http://www.bis.org/publ/bcbs164.pdf accessed 21 October 2015

Bank for International Settlements, ’Supervision of Financial Conglomerates‘ https://www.bis.org/publ/bcbs47.pdf accessed 11 April 2019

Bank for International Settlements, ’The Basel Committee’s Response to the Financial Crisis: Report to the G20‘ https://www.bis.org/publ/bcbs179.pdf accessed 10 April 2019

Bank for International Settlements, 'The New Basel Capital Accord' http://www.bis.org/publ/bcbsca03.pdf accessed 21 October 2015

Bank for International Settlements, 'The New Basel Capital Accord' http://www.bis.org/publ/bcbscp3.pdf accessed 21 October 2015

Bank for International Settlements, 'The Regulatory Framework: Balancing Risk Sensitivity, Simplicity and Comparability' https://www.bis.org/publ/bcbs258.pdf accessed 15 March 2018

Bank for International Settlements, 'The State of Global Financial Regulation' https://www.bis.org/speeches/sp171013a.pdf accessed 24 April 2018

Bank of England, 'Agreed proposal of the United States Federal Banking Supervisory Authorities and the Bank of England on primary capital and capital adequacy assessment' https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/1987/agreed-proposal-of-the-us-federal-banking-supervisory-authorities.pdf?la=en&hash=8CB027D41283DA6A06DC35A092AEFEF6DB6FD0BE accessed 3 April 2019

Bank of England, 'Banking Reform and Macro Prudential Regulation: Implications for Banks' Capital Structure and Credit Conditions' http://www.bankofengland.co.uk/publications/Pages/news/2013/076.aspx accessed 8 November 2014

Bank of England, 'Capital Requirements Directive IV' http://www.bankofengland.co.uk/pra/Pages/crdiv/default.aspx accessed 25 February 2015

Bank of England, http://www.bankofengland.co.uk/Pages/home.aspx accessed 7 October 2014

Bank of England, 'Non-Performing Loans: Regulatory and Accounting Treatments of Assets' https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2016/non-performing-loans-regulatory-and-accounting-treatments-of-assets.pdf?la=en&hash=6475E061079B70B6371688336E5FBFC634225C3D accessed 19 April 2018

Bank of England, 'Structural Reform' https://www.bankofengland.co.uk/prudential-regulation/key-initiatives/structural-reform accessed 9 April 2019

Barbican Consulting, 'Value at Risk (VAR) Guide' http://www.barbicanconsulting.co.uk/var accessed 12 August 2016

Barrailler M and Dufour T, 'Value at Risk and Expected Shortfall' http://users.polytech.unice.fr/~dufour/files/PFE_ES_Report accessed 1 March 2017

Bayar Y, 'Evaluation of Sovereign Risk Ratings in Consideration of European Sovereign Debt Crisis' https://www.ekf.vsb.cz/export/sites/ekf/rmfr/.content/galerie-

dokumentu/2014/sbornik/Bayar.Yilmaz.pdf page 25 accessed 15 November 2017

BBC, 'Mortgages of 100% 'Were Foolish"' http://news.bbc.co.uk/1/hi/uk/7904621.stm accessed 28 May 2015

Bernanke B S, 'Basel II: Its Promise and its Challenges' http://www.federalreserve.gov/newsevents/speech/bernanke20060518a.htm accessed 11 June 2015

Bershidsky L, 'Where the U.K.'s Bank Bailout Went Wrong' http://www.bloombergview.com/articles/2015-08-04/where-the-u-k-s-bank-bailout-went-wrong accessed 13 October 2015

Bijkerk W, 'Enforcement Cooperation' https://www.iosco.org/research/pdf/Enforcement-Cooperation-in-IOSCO.pdf accessed 6 January 2017

Binici M, Hutchinson M and Miao E W, 'Are Credit Rating Agencies Discredited? Measuring Market Price Effects From Agency Sovereign Debt Announcements' https://www.bis.org/publ/work704.pdf accessed 23 May 2018

Biryukov A, 'Kremlin Said to Urge Basel III Delay as Economic Crisis Hits' http://www.bloomberg.com/news/articles/2015-09-27/kremlin-said-to-urge-basel-iii-delay-as-economic-crisis-deepens accessed 6 January 2016

Blundell-Wignall A and Atkinson P, 'Thinking Beyond Basel III: Necessary Solutions for Capital and Liquidity' http://www.oecd.org/finance/financial-markets/45314422.pdf accessed 20 April 2018

Board of Governors of the Federal Reserve System, 'Basel Regulatory Framework' http://www.federalreserve.gov/bankinforeg/basel/USImplementation.htm#baseIII accessed 6 January 2016

Bohme M and others, 'Day of Reckoning? New Regulation and its Impact on Capital-Markets Businesses' https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Risk/Working%20papers/29_Day_of_reckoning.ashx accessed 9 March 2016

Bofinger P, 'Public Sector Credit Rating Agencies = More Stable Financial Architecture' http://ss.rrojasdatabank.info/globalecon7.pdf accessed 6 January 2017

Bonorchis R, 'South Africa's VBS Mutual Bank Fails Amid 'Severe Liquidity Crisis'' https://www.bloomberg.com/news/articles/2018-03-11/s-africa-s-vbs-mutual-bank-fails-amid-severe-liquidity-crisis accessed 1 November 2018

Borak D, 'House Votes to Kill Dodd-Frank. Now What?' http://money.cnn.com/2017/06/08/news/economy/house-dodd-frank-repeal/index.html accessed 23 April 2018

Brinded L, 'Basel III: Less Than Half of Nations Meet Deadline For New Bank Capital Rules' http://www.ibtimes.co.uk/basel-iii-capital-requirements-committee-regulation-420179 accessed 9 March 2016

Buehler K, Samandari H and Mazingo C, 'Capital Ratios and Financial Distress: Lessons From the Crisis' https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/risk/working%20papers/15_capital_ratios_and_financial_distress.ashx accessed 19 April 2018

Butler T, 'What Really Happened to Bear Stearns?' http://silverseek.com/commentary/what-really-happened-bear-stearns-12942 accessed 14 September 2018.

Cadiou C and Mars M, 'Basel II Pillar 3: Challenges for banks' https://www.pwc.com/gx/en/banking-capital-markets/pdf/Basel.pdf accessed 25 June 2015

Caggiano G and Calice P, 'The Macroeconomic Impact of Higher Capital Ratios on African Economies' http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/WPS%20139%20The%20Macroeconomic%20Impact%20of%20Higher%20Capital%20Ratios%20on%20African%20Economies%20%20Nv.pdf accessed 9 March 2016

Campus R, 'Government Shows its Teeth to Credit Rating Agencies' http://thehill.com/blogs/congress-blog/economy-budget/231923-

government-shows-its-teeth-to-credit-rating-agencies accessed 6 January 2017

CAPCO, 'Transformation or Extinction: The Consequences of Basel III for the Banking Industry' http://www.capco.com/uploads/articlefiles/381/file_0_1420721376.pdf accessed 3 March 2016

Capie F and Wood G, 'Do we Need Regulation of Bank Capital?' http://www.iea.org.uk/sites/default/files/publications/files/Do%20we%20need%20regulation%20of%20bank%20capital.pdf accessed 19 April 2018

CAPITA, 'What will be the Challenges Implementing Basel III?' http://www.capitatransformation.co.uk/markets/documents/what%20will%20be%20the%20the%20challenges%20of%20implementing%20basel%20iii%20nov12.pdf accessed 9 March 2016

CESR, 'CESR's Report to the European Commission on the Compliance of Credit Rating Agencies with the IOSCO Code' http://ec.europa.eu/finance/securities/docs/agencies/report_en.pdf accessed 6 January 2017

CFI, 'Credit Default Swap' https://corporatefinanceinstitute.com/resources/knowledge/finance/credit-default-swap-cds/ accessed 19 April 2018

Chang R, 'Entry Barriers Stifle U.S. Credit Ratings Competition' https://www.reuters.com/article/businesspro-us-usa-ratings-competition-a-idUSTRE55N4VU20090624 accessed 23 May 2018

Clayton Utz, 'Basel Introduces Tough Capital Rules Affecting Hybrid Securities' http://www.claytonutz.com/publications/news/201101/17/basel_introduces_tough_capital_rules_affecting_hybrid_securities.page accessed 30 October 2015

CNBC, 'Lehman Brothers Files for Bankruptcy, Scrambles to Sell Key Business' http://www.cnbc.com/id/26708143 accessed 17 March 2016

Council on Foreign Relations, 'The Credit Rating Controversy' http://www.cfr.org/financial-crises/credit-rating-controversy/p22328 accessed 16 June 2016

Cox J, 'Yellen: Banks 'Very Much Stronger'; Another Financial Crisis Not Likely 'In Our Lifetime'' https://www.cnbc.com/2017/06/27/yellen-banks-very-much-stronger-another-financial-crisis-not-likely-in-our-lifetime.html accessed 23 April 2018

CRO Council, 'Model Validation Principles Applied to Risk and Capital Models in the Insurance Industry' http://www.crocouncil.org/images/CRO_Council_-_Model_Validation_Principles.pdf accessed 13 July 2018

Daily Sabah, 'Credit Rating Agency Sector Needs More Completion, Experts Say' http://www.dailysabah.com/economy/2016/08/05/credit-rating-agency-sector-needs-more-competition-experts-say accessed 6 January 2017

Daniels K N and Jensen M S, 'The Effect of Credit Ratings on Credit Default Swap Spreads and Credit Spreads' https://www.researchgate.net/publication/228616180_The_Effect_of_Credit_Ratings_on_Credit_Default_Swap_Spreads_and_Credit_Spreads accessed 14 September 2018

Danielsson J and Zhou C, 'Why Risk is so Hard to Measure' http://www.riskresearch.org/files/DanielssonZhou2016.pdf accessed 31 March 2017

Davies H, 'A Shot of Money' http://www.slate.com/articles/business/project_syndicate/2011/10/basel_iii_should_banks_be_required_to_hold_more_capital_.html accessed 19 April 2018

Deb P and others, 'Whither the Credit Ratings Industry' https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-paper/2011/whither-the-credit-ratings-industry.pdf accessed 14 April 2016

de Groen W P, 'A Closer Look at Dexia: The Case of the Misleading Capital Ratios' https://www.ceps.eu/system/files/WPdG%20on%20Dexia.pdf accessed 23 May 2018

Deloitte, 'Basel III: The Bank Capital marathon' https://blogs.deloitte.co.uk/financialservices/2018/03/basel-iii-the-bank-capital-marathon.html accessed 9 April 2019

Deloitte, 'Finalization of the Basel III Post-Crisis Regulatory Reforms' https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/risk/lu-rna-finalization-basel-iii-post-crisis-regulatory-reform-08122017.pdf accessed 25 April 2018

Denning S, 'Lest we Forget: Why we had a Financial Crisis' http://www.forbes.com/sites/stevedenning/2011/11/22/5086/ accessed 13 August 2015

Denning S, 'Will Higher Capital Requirements Make the Banking System Safe?' https://www.forbes.com/sites/stevedenning/2013/06/25/will-higher-capital-requirements-make-the-banking-system-safe/#5cacf28d77c6 accessed 19 April 2018

Diomande M A, Heinz J and Pollin R, 'Why US Financial Markets Need a Public Credit Rating Agency' http://www.peri.umass.edu/media/k2/attachments/Why_U_S_Financial_Markets_Need_a_Public_Credit_Rating_Agency.pdf accessed 6 January 2017

Droogenbroek G V, 'Banks Far from Consensus on Classifying High-Quality Liquid Assets in the EU' http://www.bloomberg.com/enterprise/blog/banks-far-from-consesus-on-classifying-high-quality-liquid-assets-in-the-eu/ accessed 14 October 2016

Drucker J and Voris B V, 'Wall Street Banks to Settle CDS Lawsuit for $1.87 Billion' http://www.bloomberg.com/news/articles/2015-09-11/wall-street-banks-reach-settlement-on-cds-lawsuit-lawyer-says accessed 6 January 2016

Dwyer G P and Lothian J R, 'The Financial Crisis and Recovery: Why so Slow?' https://www.frbatlanta.org/cenfis/publications/notesfromthevault/1110.aspx accessed 24 January 2016

ECB, 'The Impact of the Basel III Leverage Ratio on Risk-Taking and Bank Stability' https://www.ecb.europa.eu/pub/pdf/other/sfafinancialstabilityreview201511.en.pdf accessed 19 April 2018

Elliot D J, 'A Primer on Bank Capital' http://www.brookings.edu/~/media/research/files/papers/2010/1/29-capital-elliot/0129_capital_primer_elliot.pdf accessed 14 January 2016

ENS Economic Bureau, 'SEBI to Tighten Norms for Credit Rating Agencies' http://indianexpress.com/article/business/economy/sebi-to-

tighten-norms-for-credit-rating-agencies-2828178/ accessed 6 January 2017

Estrella A and others, 'Credit Ratings and Complimentary Sources of Credit Quality Information' http://www.bis.org/publ/bcbs_wp3.pdf accessed 13 April 2016

Eubanks W W, 'The Status of the Basel III Capital Adequacy Accord' http://www.fas.org/sgp/crs/misc/R41467.pdf accessed 30 October 2015

EUbusiness, 'EU Legislative Proposal on Credit Rating Agencies (CRAs) - Guide' http://www.eubusiness.com/topics/finance/credit-rating accessed 13 April 2016

EUROPA, 'Proposal for a Regulation of the European Parliament and of the Council' ec.europa.eu/internal_market/securities/docs/agencies/proposa;_en.pdf accessed 16 November 2017

European Banking Authority, 'EBA Publishes Full Impact Assessment of Basel Reforms on EU Banks' https://www.eba.europa.eu/-/eba-publishes-full-impact-assessment-of-basel-reforms-on-eu-banks accessed 24 April 2018

European Banking Authority, 'EBA Report on Liquidity Measure and the Review of the Phase-in of the Liquidity Coverage Requirement Under Article 461(1) of the CRR' https://www.eba.europa.eu/documents/10180/1700800/EBA+report+o

n+liquidity+measures+and+the+review+of+the+phase-in+of+the+liquidity+coverage+requirement+%28EBA-Op-2016-22%29.pdf accessed 23 April 2018

European Banking Authority, 'EBA Welcomes the Revised Basel Framework and Provides an Overview of its Impact in the EU' https://eba.europa.eu/-/eba-welcomes-the-revised-basel-framework-and-provides-an-overview-of-its-impact-in-the-eu accessed 9 April 2019

European Banking Authority, http://www.eba.europa.eu accessed 7 October 2014

European Banking Authority, 'Implementing Basel III Europe: CRD IV Package' http://www.eba.europa.eu/regulation-and-policy/implementing-basel-iii-europe accessed 7 October 2014

European Banking Authority, 'Market risk' https://www.eba.europa.eu/regulation-and-policy/market-risk accessed 15 March 2018

European Banking Authority, 'The Application of the Supervisory Review Process Under Pillar 2 (CP03)' https://www.eba.europa.eu/cebs-archive/publications/consultations/2004/cp03 accessed 11 April 2015

European Banking Authority, 'The New Basel Capital Accord and the Future of the European Financial System' http://www.eba.europa.eu/documents/10180/27702/Sp01.PDF accessed 8 November 2014

European Central Bank, ’Regulation and Supervision in Europe – Can Many Cooks Make a Good Broth?‘ https://www.bankingsupervision.europa.eu/press/speeches/date/2017/html/ssm.sp170515.en.html accessed 4 April 2019.

European Commission, ’Banking Regulation: Commission Welcomes Basel Committee’s Agreement on Post-Crisis Reforms‘ http://europa.eu/rapid/press-release_IP-17-5171_en.htm accessed 9 April 2019

European Commission, ’Capital Requirements - CRD IV/CRR - Frequently Asked Questions‘ http://europa.eu/rapid/press-release_MEMO-13-690_en.htm What is the difference between Tier 1 and Tier 2 capital? accessed 14 January 2016

European Commission, ’Commission Measure to Address the Risks Related to NPLs‘ https://ec.europa.eu/info/publications/180314-proposal-non-performing-loans_en accessed 9 April 2019

European Commission, ’Non-Performing Loans (NPLs)‘ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-banks-and-financial-institutions/non-performing-loans-npls_en accessed 9 April 2019

European Commission, ’Regulating Credit Rating Agencies‘ https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-supervision-and-risk-management/managing-risks-

banks-and-financial-institutions/regulating-credit-rating-agencies_en accessed 23 May 2018

European Parliament, 'Amending Capital Requirements: The 'CRD V Package''' http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/599385/EPRS_BRI%282017%29599385_EN.pdf accessed 9 April 2019

European Parliament, 'Finalisation of Basel III Post-Crisis Reforms' http://www.europarl.europa.eu/RegData/etudes/ATAG/2017/614486/IPOL_ATA(2017)614486_EN.pdf accessed 9 April 2019

European Parliament, 'Upgrading the Basel standards: From Basel III to Basel IV?' http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/587361/IPOL_BRI(2016)587361_EN.pdf accessed 24 April 2018

European Parliament, 'Overview and Structure of Financial Supervision and Regulation in the US' http://www.europarl.europa.eu/RegData/etudes/STUD/2015/492470/IPOL_STU%282015%29492470_EN.pdf accessed 4 April 2019

EY, 'Basel III Liquidity Requirements and Implications' http://www.ey.com/GL/en/Industries/Financial-Services/Banking---Capital-Markets/Basel-III-liquidity-requirements-and-implications---Regulatory-rules-operational-and-strategic-implications accessed 3 March 2016

Farid J, 'Calculating Value at Risk (VaR): VaR Methods' https://financetrainingcourse.com/education/2010/03/master-class-calculating-value-at-risk-var-var-methods/ accessed 7 July 2016

Fernando V, 'Europe's New Debt Solution: Create Their Own Ratings Agency That Only Gives Friendly Ratings' http://www.businessinsider.com/europe-dosent-trust-rating-agencies-so-they-are-setting-up-their-own-2010-3?IR=T accessed 14 April 2016

Finance Train, 'Three Methodologies for Calculating VaR' http://financetrain.com/three-methodologies-for-calculating-var/ accessed 31 March 2017

Financial Conduct Authority, 'Resecuritisation' https://www.handbook.fca.org.uk/handbook/glossary/G2256.html accessed 17 January 2019.

Financial Conduct Authority, 'Ring-Fencing' https://www.fca.org.uk/consumers/ring-fencing accessed 12 March 2018

Financial Crisis Inquiry Commission, 'The Financial Crisis Inquiry Report' https://cybercemetery.unt.edu/archive/fcic/20110310173545/http://c0182732.cdn1.cloudfiles.rackspacecloud.com/fcic_final_report_full.pdf accessed 4 April 2019

Financial Crisis Inquiry Commission, 'The Financial Crisis Inquiry Report' https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf accessed 10 April 2019

Financial Crisis Inquiry Commission, 'The Crisis was Avoidable – A Result of Human Actions, Inactions and Misjudgements; Warning Signs Were Ignored' https://cybercemetery.unt.edu/archive/fcic/20110310171107/http://c0186234.cdn1.cloudfiles.rackspacecloud.com/2011-0127-fcic-releases-report.pdf accessed 10 April 2019

Financial Services Authority, 'Definition of Capital' http://www.fsa.gov.uk/pubs/discussion/dp07_06.pdf accessed 2 July 2015

Financial Services Authority, 'The Basel Accord and Capital Requirements Directive' http://www.fsa.gov.uk/about/what/international/basel accessed 7 October 2014

Financial Services Authority, 'The Turner Review' http://www.fsa.gov.uk/pubs/other/turner_review.pdf accessed 6 January 2017

Financial Stability Board, 'Basel III - Implementation' http://www.fsb.org/what-we-do/implementation-monitoring/monitoring-of-priority-areas/basel-iii/ accessed 25 April 2018

Financial Stability Board, 'FSB Publishes 2017 G-SIB List' http://www.fsb.org/2017/11/fsb-publishes-2017-g-sib-list/ accessed 1 May 2018

Financial Stability Board, 'Principles on Loss-absorbing and Recapitalisation Capacity of G-Sibs in Resolution: Total Loss-absorbing Capacity (TLAC) Term Sheet' http://www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf accessed 4 April 2019.

Financial Stability Board, 'Reducing Procyclicality Arising From the Bank Capital Framework'

http://www.fsb.org/wp-content/uploads/r_0904f.pdf?page_moved=1 accessed 15 March 2018

Financial Stability Forum, 'Report of the Financial Stability Forum on Enhancing Market and Institutional Resilience' http://www.fsb.org/wp-content/uploads/r_0804.pdf?page_moved=1 accessed 6 January 2017

Financial Times, 'Definition of Capital Adequacy Ratio' http://lexicon.ft.com/Term?term=capital-adequacy-ratio accessed 3 March 2016

Financial Times, 'Definition of Fat Tails' http://lexicon.ft.com/Term?term=fat-tails accessed 17 August 2016

Financial Times, 'Definition of Rating Agencies' http://lexicon.ft.com/Term?term=rating-agencies accessed 13 April 2016

Finney D, 'A Brief History of Credit Rating Agencies' http://www.investopedia.com/articles/bonds/09/history-credit-rating-agencies.asp accessed 13 April 2016

Foster J, 'Changes in US Banking Regulation - Tier 1 Capital Requirements' https://www.nyif.com/articles/changes-in-us-banking-regulation-tier-1-capital-requirements accessed 19 April 2018

Fox J, 'What We've Learned from the Financial Crisis' https://hbr.org/2013/11/what-weve-learned-from-the-financial-crisis accessed 19 April 2018

FRTB, 'Historical Simulation VaR - Easy Guide' http://frtb.info/historical-simulation-var/ accessed 23 September 2016

Gaillard N, 'Credit Rating Agencies and the Eurozone crisis: What is the Value of Sovereign Ratings?' http://www.voxeu.or/article/credit-rating-agencies-and-eurozone-crisis-what-value-sovereign-ratings accessed 14 April 2016

Gavras P, 'Ratings Game' http://www.imf.org/external/pubs/ft/fandd/2012/03/gavras.htm accessed 14 April 2016

Gheerbrant M and Lever M, Letter to European Banking Authority https://www.afme.eu/globalassets/downloads/consultation-responses/isda-afme-response-to-eba-consultation-on-guidelines-on-treatment-of-cva-risk-under-srep-eba-cp201521.pdf accessed 31 March 2017

Global Risk Advisory, 'Global Risk Management' http://globalriskadvisory.co.uk/global-risk-management.html accessed 16 September 2015

Glover J and Schwartzkopff F, 'Basel Restores Rating Role in Overhaul of Banks' Credit Risk' https://www.bloomberg.com/news/articles/2015-12-10/basel-restores-rating-role-in-overhaul-of-bank-credit-risk-rules accessed 9 December 2016

Goldman Sachs, 'Goldman, Sachs & Co. Agrees to Settlement with SEC' http://www.goldmansachs.com/media-relations/press-releases/archived/2010/settlement.html accessed 23 May 2018

Gov.uk, 'Commission Consultation on Basel III Implementation – HM Treasury Response' https://www.gov.uk/government/publications/commission-consultation-on-basel-iii-implementation-hm-treasury-response accessed 9 April 2019

Gov.uk, 'Ring-Fencing Information' https://www.gov.uk/government/publications/ring-fencing-information/ring-fencing-information accessed 9 April 2019

Gual J, 'Capital Requirements Under Basel III and Their Impact on the Banking Industry' http://www.caixabankresearch.com/documents/10180/53163/ep07_eng.pdf/b39c4fcf-f72e-4a42-aadb-b1431a3feee8 accessed 3 March 2016

Gup B E, 'Testimony Before the U.S. House of Representatives, Committee on Financial Services, Subcommittee on Financial Institutions and Consumer Credit' http://financialservices.house.gov/media/pdf/061903bg.pdf accessed 25 February 2015

Hancock D, 'World-Class Scandal at WorldCom' http://www.cbsnews.com/news/world-class-scandal-at-worldcom/ accessed 19 June 2015

Hassan H, 'Basel II - Disclosures Requirements' http://www.kpmg.com/EG/en/IssuesAndInsights/Documents/Issues-Insights%20PDFs/Basel%2011letter%206%20%20pllr%203%20Disclosure%20v3.pdf accessed 29 July 2015

Havemann J, 'The Financial Crisis of 2008' https://www.britannica.com/topic/Financial-Crisis-of-2008-The-1484264 accessed 24 April 2018

Hewitt G, 'Eurozone Edges out of Recession' http://bbc.co.uk/news/world-europe-23695877 accessed 6 January 2016

Hills S, ’Basel Committee’s Radical Proposals Could See Borrowing Costs Rise‘ https://www.bba.org.uk/news/bba-voice/basel-committees-radical-proposals-could-see-borrowing-costs-rise/#.Vw9ah8f0ffY accessed 14 April 2016

Holton G A, ’Value-at-Risk‘ https://www.value-at-risk.net/shortcomings-historical-simulation/ accessed 12 August 2016

Holton G A, ’RiskMetrics‘ https://www.value-at-risk.net/riskmetrics/ accessed 23 May 2018

Hopper G P, ’Value At Risk: A New Methodology for Measuring Portfolio Risk‘ http://people.stern.nyu.edu/igiddy/valueatrisk.htm accessed 17 May 2017

Hurtado P and Voris B V, ’Morgan Stanley Settles Washington, Abu Dhabi Lawsuits‘ https://www.bloomberg.com/news/articles/2013-04-26/morgan-stanley-settles-washington-abu-dhabi-lawsuits accessed 6 January 2017

ICMA, ’What Does a CCP do? What are the Pros and Cons?‘ https://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/repo-and-collateral-markets/icma-ercc-publications/frequently-asked-questions-on-repo/27-what-does-a-ccp-do-what-are-the-pros-and-cons/ accessed 29 June 2018

IIF, ’Committees and Working Groups‘ https://www.iif.com/advocacy/committees accessed 28 October 2016

IMF, ’Implementation of Basel II - Implications for the World Bank and the IMF‘ http://www.imf.org/external/np/pp/eng/2005/072205.htm accessed 29 July 2015

IMF, ’Lessons from the Recent Financial Crisis and the Role of the Fund‘ https://www.imf.org/en/News/Articles/2015/09/28/04/53/sp062608 accessed 10 April 2019

INTOSAI, ’The Cause of the Global Financial Crisis and Their Implications for Supreme Audit Institutions‘ http://www.intosai.org/uploads/gaohq4709242v1finalsubgroup1paper.pdf accessed 10 November 2015

Investopedia, ’Haircut‘ http://www.investopedia.com/terms/h/haircut.asp accessed 23 September 2016

Investopedia, ’Liquidity Coverage Ratio - LCR‘ http://www.investopedia.com/terms/l/liquidity-coverage-ratio.asp accessed 14 October 2016

Investopedia, ’Log-Normal Distribution‘ http://www.investopedia.com/terms/l/log-normal-distribution.asp accessed 7 July 2016

Investopedia, ’Modern Portfolio Theory (MPT)‘ http://www.investopedia.com/terms/m/modernportfoliotheory.asp accessed 14 July 2016

Investopedia, ’Nonperforming Loan - (NPL)‘ https://www.investopedia.com/terms/n/nonperformingloan.asp accessed 12 March 2018

Investopedia, ’Off Balance Sheet - OBS‘ https://www.investopedia.com/terms/o/off-balance-sheet-obs.asp accessed 22 November 2017

Investopedia, ’Total Debt to Total Assets‘ http://www.investopedia.com/terms/t/totaldevttototalassets.asp accessed 19 June 2015

IOSCO, ’Code of Conduct Fundamentals for Credit Rating Agencies‘ http://www.iosco.org/library/pubdocs/pdf/IOSCOPD180.pdf accessed 6 January 2017

IOSCO, ’Code of Conduct Fundamentals for Credit Rating Agencies‘ https://www.iosco.org/library/pubdocs/pdf/IOSCOPD173.pdf accessed 11 July 2018

IOSCO, ’Code of Conduct Fundamental for Credit Rating Agencies: Final Report‘ https://www.iosco.org/library/pubdocs/pdf/IOSCOPD482.pdf accessed 29 June 2018

IOSCO, ’IOSCO’s Strategic Direction 2015 to 2020‘ https://www.iosco.org/library/pubdocs//pdf/IOSCOPD496.pdf accessed 6 January 2017

IOSCO, 'The Role of Credit Ratings Agencies in Structured Finance Markets' http://www.iosco.org/library/pubdocs/pdf/IOSCOPD270.pdf accessed 6 January 2017

ISDA Quarterly, 'The Basel III Timeline' http://www.isda-iq.org/2015/10/16/the-basel-iii-timeline/ accessed 9 March 2016

Izmaylov B, 'Value-at-Risk: Strengths, Caveats and Considerations for Risk Managers and Regulators' http://pure.au.dk/portal-asb-student/files/71175799/Master_Thesis_Bogdan_Izmaulov.pdf accessed 31 March 2017

Johnston R B and Nedelescu O M, 'The Impact of Terrorism on Financial Markets' https://www.imf.org/external/pubs/ft/wp/2005/wp0560.pdf page 12 accessed 9 April 2019

Jones H, 'Regulators to Delay Meeting in bid to Reach Bank Capital Deal' https://perma.cc/5ZCM-FN99 accessed 24 April 2018

Joshi D and Morris S, 'What is Basel IV?' https://www.db.com/newsroom_news/2018/what-is-basel-iv-en-11456.htm accessed 24 April 2018

J.P.Morgan, 'Leveraging the Leverage Ratio' https://www.jpmorgan.com/jpmpdf/1320634324649.pdf accessed 28 October 2016

Kavitha K and Roopa H S, 'Changing Basel Reforms for Banking Sector'

http://ijemr.in/wp-content/uploads/2018/01/Changing-Basel-Reforms-for-Banking-Sector.pdf accessed 4 November 2015

Kiff J, 'IMF Survey: Reducing Role of Credit Ratings Would Aid Market' http://www.imf.org/external/pubs/ft/survey/so/2010/RES092910A.htm accessed 16 December 2016

KPMG, 'Basel III: Issues and Implications' http://www.kpmg.com/global/en/issuesandinsights/articlespublications/documents/basell-iii-issues-implications.pdf accessed 9 March 2016

KPMG, 'Basel 4 - Emerging from the Mist?' https://assets.kpmg.com/content/dam/kpmg/pdf/2013/09/emerging-from-the-mist.pdf accessed 22 November 2014

KPMG, 'Liquidity: A Bigger Challenge Than Capital' https://assets.kpmg.com/content/dam/kpmg/pdf/2012/06/Liquidity-challenges-O-201205.pdf accessed 7 October 2016

KPMG, 'The World Awaits: Basel 4 Nears Completion' https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2016/12/world-awaits-basel-4-nears-completion.pdf accessed 25 April 2018

Krantz M, '2008 Crisis Still Hangs Over Credit-Rating Firms' http:www.usatoday.com/story/money/business/2013/09/13/credit-rating-agencies-2008-financial-crisis-lehman/2759025/ accessed 10 February 2017

Laurent J P and Firouzi H O, 'Market Risk Volatility Weighted Historical Simulation After Basel III' http://laurent.jeanpaul.free.fr/Market%20Risk%20and%20VWHS%20After%20Basel%20III.pdf accessed 25 May 2018

Lehrer E, 'Subprime Borrowers: Not Innocents' http://www.businessweek.com/debateroom/archives/2008/03/subprime_borrowers_not_innocents.html accessed 10 November 2015

Lekatis G, 'Basel III: Understanding the Capital Conservation Buffer' http://www.treasury.nl/blog/basel-iii-understanding-the-capital-conservation-buffer/ accessed 19 April 2019

Li H and others, 'Approaches to VaR' https://web.stanford.edu/class/msande444/2012/MS&E444_2012_Group2a.pdf accessed 23 May 2018

Lindner F, 'How Rating Agencies are Aggravating the Euro Crisis' https://www.socialeurope.eu/2012/03/how-rating-agencies-are-aggravating-the-euro-crisis/ accessed 14 April 2016

Lopez J A, 'Disclosure as a Supervisory Tool: Pillar 3 of Basel II' http://www.frbsf.org/economic-research/publications/economic-letter/2003/august/disclosure-as-a-supervisory-tool-pillar-3-of-basel-ii. accessed 29 July 2015

Ludwig E A, 'Lessons Learned from the Financial Crisis 2008' https://group30.org/images/uploads/publications/G30_LessonsLearned2008FinancialCrisis.pdf accessed 10 April 2019

Madslien J, 'Dotcom Bubble Burst: 10 Years On' http://news.bbc.co.uk/1/hi/business/8558257.stm accessed 24 April 2018

Managed Initiatives, 'Basel II Background' http://www.managedinitiatives.com/basel/basel-ii accessed 19 May 2017

Mariathasan M and Merrouche O, 'The Manipulation of Basel Risk Weights. Evidence from 2007-2010' http://www.centralbank.gov.cy/media/pdf/NPWPE_MARIATHASAN_MAY2012.pdf accessed 11 June 2015

Marston R, 'What is a Rating Agency?' http://www.bbc.co.uk/news/10108284 accessed 22 November 2014

Mathew J, '36 European Banks Would Have Failed Stress Tests Based on Basel III Norms' http://www.ibtimes.co.uk/36-european-banks-would-have-failed-stress-test-based-basel-iii-norms-1472049 accessed 9 March 2016

McCombie H, 'The 2014: Living in the Shadow of Regulation? White Paper the Crash' http://www.morganmckinley.co.uk/article/2014-living-shadow-regulation-white-paper-crash accessed 29 July 2015

McKinsey&Company, 'Basel "IV": What's Next for Banks?' https://www.mckinsey.com/~/media/mckinsey/business%20functions/risk/our%20insights/basel%20iv%20whats%20next%20for%20european%20banks/basel-iv-whats-next-for-banks.ashx accessed 24 April 2018

Mehta A and others, 'Managing Market Risk: Today and Tomorrow' http://www.mckinsay.com/business-functions-risk/our-insights/managing-market-risk-today-and-tomorrow accessed 7 July 2016

Menon S, 'VBS Mutual Bank: How Did We Get Here?' https://www.businesslive.co.za/fm/features/2018-03-13-vbs-mutual-bank-how-did-we-get-here/ accessed 1 November 2018

Mitchell J, 'Credit Rating Agencies Make 'Surprising' Comeback' http://www.mortgagebusiness.com.au/breaking-news/9390-credit-ratings-agencies-make-surprise-comeback accessed 14 April 2016

Morgan Stanley, 'Basel III: Impact on the Money Markets' https://www.morganstanley.com/im/publication/insights/regulatory/regulatory_baseliiiimpactonthemm_us.pdf accessed 23 April 2018

Morgij Analytics, 'Credit Rating Agencies - Do Their Business Models Need to Change to Resolve Conflicts of Interests?' http://www.morgij.com.au/credit-rating-agencies-do-their-business-models-need-to-change-to-resolve-conflicts-of-interests/ accessed 16 June 2016

Nasiripour S, 'Credit Rating Agency Analysts Covering AIG, Lehman Brothers Never Disciplined' http://www.huffingtonpost.com/2009/09/30/credit-rating-agency-anal_n_305587.html accessed 13 April 2016

Nathan N, 'How to Make Credit Rating Agencies More Responsible' http://blogs.economictimes.indiatimes.com/counter-point/how-to-make-credit-rating-agencies-more-responsible/ accessed 6 January 2017

Njobeni S, 'VBS Bank Liquidity is 'Far Worse'' https://www.iol.co.za/business-report/companies/vbs-bank-liquidity-is-far-worse-15230535 accessed 1 November 2018

Nocera J, 'Risk Management' https://www.nytimes.com/2009/01/04/magazine/04risk-t.html accessed 29 June 2018

Norton Rose Fulbright, 'An Introduction to Basel III - Its Consequences for Lending' http://www.nortonrosefulbright.com/knowledge/publications/31077/an-introduction-to-basel-iii-its-consequences-for-lending accessed 3 March 2013

NYU Stern School of Business, 'Value at Risk (VAR)' http://people.stern.nyu.edu/adamodar/pdfiles/papers/VAR.pdf accessed 14 July 2016

OECD, 'Competition and Credit Rating Agencies' https://www.oecd.org/competition/sectors/46825342.pdf accessed 13 April 2016

OECD Observer, 'Is GDP a Satisfactory Measure of Growth?' http://oecdobserver.org/news/archivestory.php/aid/1518/Is_GDP_a_satisfactory_measure_of_growth_.html accessed 19 April 2018

Pala T, 'What Lies Beneath: How Off-Balance Sheet Treatment Can Hide the True Debt Picture' http://legalmca.com/2013/02/08/what-lies-beneath-how-off-balance-sheet-treatment-can-hide-the-true-debt-picture/ accessed 23 November 2017

Palisade, 'Monte Carlo Simulation' http://www.palisade.com/risk/monte_carlo_simulation.asp accessed 23 September 2016

Papanikolaou N and Wolff C, 'The Global Crisis Beyond Banks' Balance Sheets' vexed.org/article/global-crisis-beyond-bank-balance-sheets accessed 22 November 2017

Perez S, 'Must-Know: Basel III's Shortcomings' https://marketrealist.com/2014/09/shortcomings-basel-3-accord accessed 19 April 2018

Perez S, 'Why Basel II.5 Corrected Basel II to Improve Banking Regulations' http://marketrealist.com/2014/09/basel-ii-5-corrected-basel-ii-improve-banking-regulations/ part 9 accessed 6 August 2015

Peterson Institute of International Economics, 'Basel I'

http://piie.com/publications/chapters_preview/4235/03iie4235.pdf accessed 11 June 2015

Pinsent Masons, 'Banking and Restructuring the Godfather of Regulation'
http://www.pinsentmasons.com/PDF/GodfatherOfRegulation.pdf accessed 14 January 2016

Policy Review, 'Credit Rating Agencies and Their Credibility Problem'
http://www.policyreview.eu/credit-rating-agencies-and-their-credibility-problem/ accessed 14 April 2016

Posner E A, 'How do Bank Regulators Determine Capital Adequacy Requirements?'
http://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2370&context=law_and_economics accessed 3 March 2016

Powell R J and Allen D E, 'CVaR and Credit Risk Measurement'
http://pandora.nla.gov.au/pan/58963/20100702-1718/www.ecu.edu.au/__data/assets/pdf_file/0016/40426/wp0905rp.pdf accessed 7 July 2016

Powers M, 'The Invention of Operational Risk'
http://eprints.lse.ac.uk/21368/1/DP16.pdf accessed 16 September 2015

Prakash A, 'Evolution of the Basel Framework on Bank Capital Regulation' https://rbi.org.in/scripts/bs_viewcontent.aspx?Id=2023 accessed 8 May 2015

PricewaterhouseCoopers, 'Ten Key Points from Basel's Final NSFR' https://www.pwc.com/us/en/financial-services/regulatory-services/publications/assets/net-stable-funding-ratio-basel-iii.pdf accessed 23 November 2016

PricewaterhouseCoopers, 'The New Basel III Framework: Navigating Changes in Bank Capital Management' https://www.pwc.com/us/en/financial-services/publications/viewpoints/assets/viewpoint-basel-iii.pdf accessed 24 January 2016

Pugsley J, 'Basel IV's Done - Now Comes the Hard Part' http://www.thebanker.com/Banking-Regulation-Risk/Reg-Rage/Basel-IV-s-done-now-comes-the-hard-part?ct=true accessed 24 April 2018

RBC, 'Basel II and III Disclosures' http://www.rbc.com/aboutus/RBCFBV-index.html accessed 14 March 2018

Research Methodology, 'Research Methods' http://research-methodology.net/research-methods/ accessed 6 August 2015

Rogachev A, 'Dynamic Value-at-Risk' http://www.risknet.de/fileadmin/eLibrary/Dynamic-VaR-Rogachev-2002.pdf accessed 12 August 2016

Rossi C, 'Banks Model Risk Worse than Ever, Thanks to Basel III' https://www.americanbanker.com/opinion/banks-model-risk-worse-than-ever-thanks-to-basel-nbsp-iii accessed 15 March 2018

Scheinert C, 'The Case for a European Credit Rating Agency' http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/589865/EPRS_BRI(2016)589865_EN.pdf accessed 6 January 2016

Schroeder S, 'The Case for Public Credit Rating Agencies' http://www.worldeconomicsassociation.org/newsletterarticles/public-credit-rating-agencies/ accessed 10 February 2017

Seabury C, 'Enron: The Fall of a Wall Street Darling' http://investopedia.com/articles/stocks/09/enron-collapse.asp accessed 19 June 2015

SEC, 'Office of Credit Ratings' https://www.sec.gov/ocr accessed 13 April 2016

SEC, 'The ABCs of Credit Ratings' https://www.sec.gov/investor/alerts/ib_creditratings.pdf page 3 accessed 16 June 2016

Schaefer S, 'A Look Back at Bear Stearns, Five Years After its Shotgun Marriage to JPMorgan'

http://www.forbes.com/sites/steveshaefer/2013/03/14/a-look-back-at-bear-stearns-five-years-after-its-shotgun-marriage-to-jpmorgan/#7749eb2d7ddc accessed 17 March 2016

Schaefer S, 'Former JPMorgan Exec Ina Drew Deflects Blame for London Whale Traders' https://www.forbes.com/sites/steveschaefer/2013/03/15/ex-jpmorgan-exec-drew-deflects-blame-for-london-whale-trades/#5fc0c6062d5d accessed 11 April 2018

Shearman and Sterling LLP, 'Basel III Framework: The Credit Valuation Adjustment (CVA) Charge for OTC Derivative Trades' http://www.shearman.com/~/media/files/newsinsights/publications/2013/11/baseliiiframeworkthecreditvaluationadjustmentcva-chargeforotcderivativetradesfiafr111113.pdf accessed 10 March 2017

Shearman and Sterling LLP, 'The New Basel III Framework: Implications for Banking Organizations' http://www.shearman.com/~/media/Files/NewsInsights/Publications/2011/03/The-New-Basel-III-Framework-Implications-for-Ban /Files/view-full-memo-The-New-Basell-III-Framwork-Impli /FileAttachment/FIA033011The new Basel III framework Implicatio .pdf accessed 9 March 2016

SIFMA, 'Recommendations of SIFMA's Credit Rating Agency Task Force for the Credit Rating System'

http://www.sifma.org/issues/item/aspx?id=21391 accessed 6 January 2017

Slaughter and May, 'Basel III: A New Capital Adequacy and Liquidity Framework for Banks' https://www.slaughterandmay.com/media/1550585/basel-iii-a-new-capital-adequacy-and-liquidity-framework-for-banks.pdf accessed 10 November 2015

Slaughter and May, 'The New Basel Capital Accord - A Guide to the Main Provisions Third Edition' http://www.slaughterandmay.com/media/39266/the_new_basel_capital_accord_-_a_guide_to_the_main_provisions_-_third_edition.pdf accessed 12 January 2014

Sommer D and Spielberg H, 'ICAAP in Europe Moving in Different Directions' https://www.kpmg.com/SG/en/IssuesAndInsights/ArticlesPublications/Documents/ICAAPinEurope.pdf accessed 29 July 2015

Springer, 'Non-Performing Loans at the Dawn of IFRS 9: Regulatory and Accounting Treatment of Asset Quality' https://rd.springer.com/article/10.1057/s41261-017-0058-8?wt_mc=Internal.Event.1.SEM.ArticleAuthorOnlineFirst accessed 12 March 2018

Standard and Poor's, 'Basel 2.5 Increases the Squeeze on Investment Banking Returns'

http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245334380388 accessed 2 May 2015

The Economist, 'Credit Where Credit's Due' http://www.economist.com/news/finance-and-economics/21601020-ratings-industry-has-bounced-back-financial-crisis-credit-where accessed 16 June 2016

The Economist, 'Measuring the Measurer' https://www.economist.com/node/9267952 accessed 15 March 2018

The Economist, 'Taking Europe's Pulse: European Economy Guide' http://www.economist.com/blogs/graphicdetai;/2015/11/taking-europe-s-pulse accessed 6 January 2016

The Economist, 'Ten Years On' https://www.economist.com/node/9432495 accessed 24 April 2018

The Economist, 'The Origins of the Financial Crisis Crash Course' https://www.economist.com/news/schoolsbrief/21584534-effects-financial-crisis-are-still-being-felt-five-years-article accessed 19 April 2018

The Economist, 'World's Biggest Bank Losses' http://www.economist.com/node/13919511 accessed 18 November 2015

Thiemann M, ’Regulations the Off-Balance Sheet Exposure of Banks‘ http://www.feps-europe.eu/assets/75a7d5a0-85ba-4954-b39f-48217e5024a1/mpifg-p11-43pdf.pdf accessed 19 April 2018

Tonks I, ’Bankers’ Bonuses and the Financial Crisis‘ http://www.voxeu.org/article/bankers-bonuses-and-financial-crisis accessed 10 November 2015

TreasuryToday, ’Value at Risk - Monte Carlo Simulation‘ http://treasurytoday.com2002/02/value-at-risk-monte-carlo-simulation accessed 7 July 2016

Trenca I, ’The Use in Banks of Value at Risk Method in Market Risk Management‘ http://anale.feaa.uaic.ro/anale/resurse/16_F12_Trenca.pdf accessed 14 July 2016

UK Financial Investments Ltd, ’Market Investments‘ http://www.ukfi.co.uk/about-us/market-investments/ accessed 30 October 2015

Wackerbeck P and others, ’Fourth Time Around? European Banks Confront ”Basel IV“‘ https://www.strategyand.pwc.com/reports/fourth-time-around accessed 25 April 2018

Walter S, ’Basel III: Stronger Banks and a More Resilient Financial System‘ http://www.bis.org/speeches/sp110406.pdf accessed 10 December 2015

Wang D, 'Collateralized Debt Obligations and Credit Default Swaps' http://danwang.co/collateralized-debt-obligations-and-credit-default-swaps/ accessed 2 October 2016

Werner M and Greif H, 'Calculating the Unknown. Rationalities of Operational Risk in Financial Institutions' https://www.triple-c.at/index.php/tripleC/article/view/184 page 237 accessed 9 April 2019

Whittall C, 'Value-at-Risk Model Masked JP Morgan $2 bln Loss' https://www.reuters.com/article/jpmorgan-var/value-at-risk-model-masked-jp-morgan-2-bln-loss-idUSL1E8GBKS920120511 accessed 9 July 2018

Willis A, 'Merkel Backs Creation of European Credit Rating Agency' https://euobserver.com/economic/30001 accessed 10 February 2017

World Finance, 'World Finance on Basel III' http://www.basel-iii.worldfinance.com accessed 3 March 2016

Xuenqing J, 'CBRC Warns Banks of Off-Balance-Sheet Activities and Assets' www.cbrc.gov.cn/chinese/home/docView/A7842A0DE94049F59953D1D84EDD76A9.html accessed 23 November 2017

Xulu L, 'Value at Risk's Apparent Manipulation' http://www.financialmail.co.za/fm/2012/07/24/value-at-risk-s-apparent-manipulation accessed 12 August 2016

Younglai R and S N Lynch, 'Credit Rating Agencies Triggered Financial Crisis, U.S. Congressional Report Finds' http://www.huffingtonpost.com/2011/04/13/credit-rating-agencies-triggered-crisis-report_n_848944.html accessed 12 May 2016

Zaher F, 'How Basel 1 Affected Banks' http://www.investopedia.com/articles/07/baselcapitalaccord.asp accessed 11 January 2015

Zimper A, 'The Minimal Confidence Levels of Basel Capital Regulation' http://www.up.ac.za/media/shared/61/WP/wp_2013_05.zp39417.pdf accessed 23 May 2018

Zhang M, 'EU to Follow US in Delaying the Implementation of Basel III' http://www.ibtimes.com/eu-follow-us-delaying-implementation-basel-iii-903024 accessed 9 March 2016

Other Sources

Private meeting, Professor Andrew Haynes and Dr Lezelle Jacobs, 3 October 2018 University of Wolverhampton, Wolverhampton.

Private meeting, Professor Andrew Haynes, 7 February 2017 University of Wolverhampton, Wolverhampton

Private meeting, Professor Andrew Haynes, 7 March 2018 University of Wolverhampton, Wolverhampton

Private meeting, Professor Andrew Haynes, 9 May 2018 University of Wolverhampton, Wolverhampton

Private meeting, Professor Andrew Haynes, 27 June 2018 University of Wolverhampton, Wolverhampton

Private meeting, Professor Andrew Haynes, 11 September 2018 University of Wolverhampton, Wolverhampton.

Private email, Professor Andrew Haynes, 10 December 2018.

Private meeting, Professor Charles Goodhart, 4 September 2015 LSE, London

Private meeting, Professor Moorad Choudhry, 23 March 2017 London

Electronic Databases

http://www.lexisnexis.co.uk

http://www.westlaw.co.uk

Caparo Industries plc v Dickman [1990] 2 AC 605

Table of Statutes

Financial Services (Banking Reform) Act 2013

Financial Services and Markets Act 2000 (Banking Reform) (Pensions) Regulations 2015

Financial Services and Markets Act 2000 (Excluded Activities and Prohibitions) Order 2014

Financial Services and Markets Act 2000 (Ring-Fenced Bodies and Core Activities) Order 2014

Financial Services and Markets Act 2000 (Ring-Fenced Bodies, Core Activities, Excluded Activities and Prohibitions) (Amendment) Order 2016

Dodd-Frank Wall Street Reform and Consumer Protection Act 2010

Capital Requirements Directive (2013/36/EU) (CRD)

Capital Requirements Regulation (575/2013) (CRR)